ENVIRONMENTAL AUDITING

A REVIEW OF CURRENT PRACTICE

BY

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FOR

Environmental Protection Service
Environment Canada

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INTRODUCTION

Public and private concern for environmental quality has experienced a significant increase in recent years and today, environmental matters have assumed an important and visible role in day-to-day life. This concern can be measured in several ways -- socially, psychologically, legally, politically, and economically. Nowhere is this concern more evident than in the business community.

For many types of industries, particularly chemical, energy and resource-related, few issues hold greater consequence than those related to the environment. The legal environmental framework under which these industries operate is quite complex and will likely become more so as new federal, state and provincial legislation is developed in response to existing and emerging environmental hazards. Already, at least 16 Canadian Federal laws and literally hundreds of regulations have direct environmental implications; many more have indirect effects.

Compliance with such regulations, and similar ones in the Unites States, while providing benefits, have been costly. United States census data for example, reveal that expenditures for pollution abatement and control grew from approximately $18.2 billion in 1972 to a staggering $48.5 billion in 1979. In that year, direct costs to business alone were estimated to be $29 billion. (McIntyre, 1983:1). Today, the United States Council on Environmental Quality estimates that industry is spending $60 billion annually to comply with environmental laws. (Business Week, June 6, 1983:92B).

The cost of non-compliance with environmental regulations, both direct and indirect, can be quite severe. In some cases, not only companies but also corporate officers and employees are liable to prosecution. Moreover, fines and penalties associated with enforcement actions can be expected to increase in the future. Potentially more damaging are the indirect financial impacts associated with environmental activities: A company's reputation and corporate image carry through to the market place and an adverse image caused by the mishandling of environmental affairs could result in a serious loss of market share. This is particularly so for a company whose consumer products are closely associated with its name.

Government regulation coupled with public awareness and concern have made this area a socio-economic hotbed. At stake are not only public and environmental health, but also a company's integrity, credibility, and even viability. Business today can ill-afford to treat environmental matters in an 'out-of-sight, out-of-mind' fashion. Rather, corporate environmental affairs in the 1980's must be characterized not merely by reacting but by anticipating and evaluating relationships among environmental activities and in many cases between corporate production and environmental activities. The environmental system must assume a position in the corporate structure as basic as the financial or production aspects. (Gibson and Fahrenthold, 1983:36).

Many corporations today have recognized this and have developed environmental management and control systems to ensure that corporate environmental activities are managed appropriately and responsibly. These systems can be quite complex and sophisticated, particularly for large corporations with several operating facilities, integrating a number of distinct functions and activities. These include 'risk management', 'impact assessment', 'compliance assurance', 'contingency planning', 'environmental affairs' (external liaison) and the like. Not surprisingly, the characteristics of individual corporate environmental management and control systems vary considerably from firm to firm, depending on the unique activities, characteristics and management needs of the individual firm. A system well suited for one firm may be inappropriate for another. Invariably, however, corporations share the need to know that their environmental management systems are adequate, effective, efficient and are working as intended.

"Environmental Auditing" is a new and somewhat innovative management concept which provides a systematic method of evaluating a firm's environmental protection activities and its overall environmental performance. Environmental auditing functions like many other program or activity reviews and in concept, it parallels internal financial auditing. As such, it **a)** assesses the adequacy, effectiveness and efficiency of the environmental management and control system, and **b)** verifies that operating plants are in compliance with legal and policy requirements.

In the last five years, the concept and application of environmental auditing have grown rapidly in the United States private sector. Several major corporations -- examples are Olin Corporation, Occidental Petroleum, Du Pont, Allied Corporation and Pennsylvania Power and Light -- have established environmental auditing programs. These companies and others like them, have recognized environmental auditing as an opportunity to deal proactively -- not reactively -- with environmental problems, and to anticipate and prevent environmental incidents which could damage both the economic health and public image of a company.

Clearly, the attractiveness of environmental auditing to private industry stems from sound business reasons: It gives upper management assurance that operating facilities are in compliance with legal and company requirements and helps to avoid tort liability. It can improve economic viability by integrating environmental (pollution control) management with other management functions such as production and financial planning, quality control and worker health and safety, and by identifying potential cost savings. Finally, as a socially responsible endeavour, environmental auditing can help to improve government relations, corporate image and employee morale; all of which can lead to a better run business and better overall corporate decision-making.

Environmental auditing can benefit the environment and public at large. It gives a corporation the tools to check compliance with regulatory requirements, to assess and improve its environmental performance, and to increase its ability to identify, manage or reduce and monitor environmental risks and hazards.

Environmental regulatory authorities can also benefit from the private sector adoption of environmental auditing. As public agencies charged with protecting and managing the natural environment, government agencies benefit simply by virtue of the benefits accrued to the environment. In addition, environmental auditing provides more and better environmental protection for the same public dollar, allowing for a more efficient allocation and use of scarce public resources.

Because of these and other benefits, environmental agencies in the United States, particularly the federal Environmental Protection Agency (E.P.A.) have expressed considerable interest in private sector environmental auditing. E.P.A. has explored various approaches to using it as a regulatory reform. Having considered and rejected both a mandatory 'third party' approach and a voluntary 'incentive based' self-certification approach, EPA has recently adopted a 'laissez-faire' approach consisting of endorsement, analysis and assistance.

In summary environmental auditing appears to present a rare convergence of private and public interests, providing potential benefits not only to private industry, but also to the environment, the government and the public at large. As a private sector initiative, environmental auditing may prove to be an innovative, timely and potent management tool that could go a long way to providing more and better environmental protection.

The following paper attempts to provide an overview of the environmental auditing state-of-the-art. It synthesizes the experiences and positions of a number of active constituencies -- primarily U.S. based -- including private corporations, government agencies, trade associations, consultants, lawyers, academics and others. These have been selected, assembled and tempered according to my own biases, experiences and thoughts on the topic. There has been a deliberate attempt to keep personal feelings and editorial comments to a minimum, however, this has not always been possible.

Note that while most of this paper is based on U.S. experiences (out of necessity), it should be of value and interest to Canadian constituencies, including private (and public) firms, government agencies, academics, and the like. Notwithstanding the differing legal requirements and systems, much of the information contained in this paper is transferable to the Canadian setting.

Chapter One discusses what an environmental audit is, its activities, the functions it serves, and some of the principles which guide it. Chapter Two outlines the steps involved in the process of conducting an environmental audit. Chapter Three discusses the benefits of environmental auditing to implementing firms, the environment, the public at large and regulatory authorities. It also touches on some of the downside aspects of auditing and potential barriers to widespread implementation. Chapter Four highlights the approaches to regulatory reform using environmental auditing that the U.S. Environmental Protection Agency has considered.

1.0 PERSPECTIVES ON ENVIRONMENTAL AUDITING

The term "environmental auditing" has only recently been coined and it may be unfamiliar to some readers. Environmental auditing has been built and modelled on a variety of auditing and related experiences, including various methods of program and project assessment, safety audits, and most important, financial accounting and auditing. Like many other program and facility evaluations, environmental auditing provides a method to monitor performance and detect problems. The unique feature of environmental auditing is that its focus is on a corporation's environmental protection activities and management systems.

While environmental auditing is emerging as a distinct practice, characterized by certain principles and conventions, it is not limited to any one set of procedures and activities. There is considerable latitude among current practitioners as to what constitutes an environmental audit: the purpose, objectives, scope, staffing, techniques and reporting vary among firms both within and across industries. Developing a single definition which takes into account the diversity and variation among individual environmental auditing programs is a difficult task. Yet it is important to establish a common base on which discussion and the development of ideas can occur. The following chapter is devoted to this end.

1.1 CONCEPTUAL BASIS FOR ENVIRONMENTAL AUDITING

The word 'audit', derived from the Latin "auditus" (a "hearing"), was coined during the Ancient Roman practice of the "Hearing of Accounts". To prevent officials in charge of monies from committing fraudulent acts, an oral verification in which officials would compare records was conducted. (Sawyer, 1982:4).

Webster's New Twentieth Century Dictionary (1975) defines "audit" as "to examine and check", implying a more consistent and structured approach to assessment and verification than the Romans used. On a conceptual level, auditing is generally undertaken to determine and increase the reliability, and hence usefulness, of information. "Information" can be of many types, including financial, management, operations, or others. On an operational level, auditing refer to a methodical and systematic examination of various procedures, activities and practicies which leads to a verification of their compliance with legal requirements, corporate policies and accepted practicies.

1.1.1 FINANCIAL AUDITING

Today, the word "auditing" is perhaps most commonly associated with the practice of auditing financial statements and other financial information. It is important here to distinguish between two types of financial auditing: external (independent) auditing and internal auditing. From both a theoretical and practical perspective, each type has contributed to environmental auditing. To more fully understand the nature and extent of that contribution,

a short description of financial auditing follows.

(i) External Financial Auditing

External (independent) auditing refers to the examination of financial statements/activities of publicly held corporations by Certified Public Accountants. By tradition, external auditing performs an attestation function* involving the objective and independent examination of financial statements made by management in order to determine their fairness, integrity and authenticity. The external auditor must be satisfied that these statements fairly present the company's financial position and that they were prepared in conformity with 'generally accepted accounting principles' applied consistently with those applied in the previous year.

External financial auditing (and accounting) is a well-established discipline and is characterized by clearly defined and enforced principles, standards, conventions and ethics. A review of some financial auditing literature suggests that environmental auditing has borrowed and adapted some of these -- both explicitly and implicitly -- the most important of which are **disclosure, materiality, consistency, independence, evidence and working papers.** Their relevance to environmental auditing is discussed later in this chapter.

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*Attestation is defined as the process by which credibility is attributed to the representations of one party to another through the offices of a third party - the attestor. (Porter and Burton, 1971:128).

The focus of external audits is largely restricted to financial information and controls. By contrast, the internal audit is a more effective and less constrained method of auditing internal non-financial management systems and controls.

(ii) Internal Financial Auditing

'Internal auditing' is an umbrella term for all forms of appraisals and analysis of activities undertaken by auditors working for and **within** an organization. The internal audit picks up where the external audit leaves off, providing a level and depth of understanding of managerial systems and controls not possible from an outside, 'financially-focused' perspective. An internal audit is a managerial control which functions by measuring and evaluating the efficiency, effectiveness and adequacy of other controls. It can be defined as,

> An independent appraisal of the diverse operations and controls within an organization to determine whether appropriate policies and procedures are followed, established standards are met, resources are used efficiently and economically, and the organization's objectivies are being met. (Sawyer, 1981:6).

Many of the principles, conventions, techniques and activities of external and internal audits are similar. The objectives of these types of audits, however, differ substantially. It is in this respect, at least conceptually, that environmental auditing resembles and is modelled after internal auditing. The primary objective of the internal audit is to assist all levels of management in the effective discharge of their responsibilities. Specifically, it attempts to determine the adequacy of internal

control, to evaluate and verify the reliability of the reporting system and management data, to establish compliance status with company and legal policies, procedures and requirements and finally, to communicate audit findings to appropriate management personnel.

1.1.2 FINANCIAL AND ENVIRONMENTAL AUDITING

Both external and internal financial auditing have contributed to the development and emergence of environmental auditing as a distinct practice. Financial auditing is the evaluation of financial affairs, activities and management systems. Accordingly, "environmental auditing" is the evaluation of environmental activities or phenomena. More specifically, within the

private sector, an environmental audit is the self-evaluation of a firm's environmental management systems, controls and protection activities. The concept of environmental auditing is applicable to any private or public organization. But to simplify exposition, terms such as 'company', 'firm', 'corporation', and 'private sector' will be used in this paper to refer to the organization adopting such a program.

It should be noted that the term environmental 'auditing' is itself the source of considerable unease and debate among current practitioners. Those who associate the term with financial auditing find its use inappropriate and somewhat abrasive when used in association with environmental matters. "Auditing" implies a certain degree of precision and standardization -- precision which is often lacking in environmental applications. There are after

all, no 'generally accepted environmental auditing principles'. Others use "audit" deliberately to lend credibility to their programs.

It is important to acknowledge that similar programs are conducted under various other names, such as "compliance monitoring", "environmental surveillance", "environmental review", "environmental excellence", and others. Sometimes such titles are deliberately chosen because they reflect the particular meaning and set of procedures of the program. Just as often, however, the choice is somewhat arbitrary. A.D. Little's Center for Environmental Assurance has observed little correlation between a program's name and its design or objectives (1980:3). Practitioners should be aware that any name suggests a particular meaning and implies some common set of agreed upon (if only informally) activities, principles and procedures. To avoid confusion, it is crucial that the title of an "audit" program, whatever it may be, be clearly and properly defined.

There are several reasons why "environmental audit" is the preferred term in this paper. On a practical level, "audit", for better or worse, appears to be the most common and prevalent term used. In the interest of facilitating the communication of ideas and knowledge (and avoiding further confusion), its use will be continued. On a conceptual level, it is important to acknowledge that financial auditing (both external and internal) forms the root of environmental auditing. Finally, perhaps the most compelling reason for using "audit" is that quite simply, it is the most appropriate. An environmental audit <u>is</u> an audit of environmental

activities.

1.2 DEFINING ENVIRONMENTAL AUDITING

Many firms today have installed some sort of environmental management function within the corporate hierarchy. Since such functions are suited to the unique structure, management philosophy and needs of the firm, they vary widely in their purpose, objectives and activities. Overall, such functions are designed to ensure that corporate environmental concerns are addressed appropriately and responsibly. Specifically, they are designed to ensure that **a)** known hazards to the environment and risks to the corporation have been identified and are being managed or controlled, and **b)** that operating facilities are in compliance with external laws and regulations and internal policies and procedures.

"Environmental compliance assurance" or simply "compliance assurance" describes the various systems and controls employed by a firm to provide a systematic method of determining, achieving and sustaining compliance with applicable environmental regulations, corporate policies and good operating practices. While it includes activities and mechanisms conducted at the corporate or divisional level, it refers largely to the various programs, procedures and mechanical devices that a firm employs at its operating plants (mills, mines, refineries, generating stations, etc) to protect the environment and public health. **An environmental audit is an evaluation or review of a firm's environmental compliance assurance system..** It provides a systematic method of verifying that the system is working as intended and that environmental affairs are

being managed effectively and responsibly.

The environmental compliance assurance system sets priorities for the corporation as a whole with respect to environmental performance and the audit evaluates the performance of specific plants and activities with respect to the overall corporate environmental compliance assurance program. (Palmisano, 1983A:23). In other words, the audit process monitors and evaluates operating facilities with respect to the pre-established performance goals, wihch might include compliance with legal requirements, adequacy of emergency response, employee awareness and training, internal notification and reporting, and so on.

An environmental audit generates a diversity of environmental data which can be transmitted vertically throughout all levels of management -- operational (plant, project), administrative (staff, middle) and senior (top, strategic). Each level processes and converts the data into different types of information* according to its function, needs and concerns. The array of information generated functions to satisfy several information needs and requirements throughout the corporate hierarchy and to support decision-making at all management levels. Moreover, the information can be of value to all functions of management: planning, organizing, directing and especially controlling.

> As an overall corporate policy, compliance assurance operates horizontally in the organization. It provides a framework within which all facilities operate. Environmental auditing on the other hand, functions vertically, transmitting information from different levels of the organization upward for review and use in decision making by upper management. (Palmisano, 1983A:21).

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*Information is defined as interpreted and selected data.

At the operational (plant, project) level, where the focus is on controlling, the information produced by the environmental audit can serve as a **line management tool***. It can assist the plant manager in meeting corporate objectives, by helping to comply with company and legal environmental requirements, to assess overall environmental performance, to identify and correct deficiencies, and to evaluate and modify existing controls.

At the administrative (middle, staff) level, the primary concern is with devising means and with organizing and implementing programs to see that corporate goals are achieved. Information developed through the environmental audit program can be used to evaluate the effectiveness and efficiency of existing programs and controls.

The senior (strategic, top) level of management -- often the focus of information generated by the program -- use the information for determining corporate ends, goals, plans and policies. Along with information provided by other information streams, such as financial, production and strategic planning, this information is used in overall corporate decision-making and planning.

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*Schein believes that the more the auditing information is made available first to the man with the problem (horizontal reporting), then to his immediate boss only if the problem is not corrected, and then only to higher levels in either the line or the auditing group if the problem is still not corrected, the more likely it is that auditing will be effective (because line organizations will be less motivated to hide or falsify information and less likely to feel punished). (1969: 142).

Palmisano believes that an environmental audit can be viewed as a management information system (MIS)*. An MIS describes a computer-based system for the coordination, distribution and presentation of data. Most corporations use MIS's to provide corporate managers with a range of data on how the company is performing with respect to budgets, sales, targets, inventory control, long term goals, etc. This information allows them to assess corporate performance against projected milestones, to identify problems and to make decisions regarding future activities for the firm.

As an MIS, environmental auditing provides management with specific information on how the firm is performing with respect to both externally established environmental requirements and internally established environmental goals. For environmental auditing to be an effective MIS, it should be integrated within an overall corporate compliance assurance program. (Palmisano, 1983A:23).

1.3 CHARACTERISTICS OF ENVIRONMENTAL AUDITING

While defining environmental auditing as a management tool and information system does serve to describe how an environmental audit functions within the corporation, it does little to describe what an audit actually is. Gaining a 'feel' for what environmenal auditing

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*As an editorial note, environmental auditing is suitable and amenable to conversion into a management information system but, by definition, it <u>is</u> not an MIS. In other words, its use as an MIS does not preclude its use as a management tool.

is perhaps best achieved through a breif description of the process and the activities involved in conducting an audit, the types of information it generates, the purposes and functions it serves and finally, of some of the general principles regarding the design and conduct of an environmental audit.

1.3.1 ENVIRONMENTAL AUDIT ACTIVITIES

An environmental audit consists of two general activities or functions: assessment and verification (A.D. Little, 1983B:8).

1. **Assessment** refers to the professional or expert judgement or opinion of the audit team members regarding the adequacy, effectiveness and efficiency of environmental management systems and controls as well as on environmental hazards and associated risks.

2. **Verification** refers to the empirical testing of the facility's performance. Specifically, it is an attempt to verify compliance with environmental regulations, the accuracy of environmental data and reports and the application of and adherence to corporate policies and procedures.

Assessment is a basic feature of any environmental audit and it attempts to answer questions like : Do existing systems meet the firm's information requirements? Are appropriate personnel notified in a timely manner in the event of an emergency or excursion beyong regulated standards? Is corporate or plant-level policy effectively communicated to operating personnel? Are training programs adequate?

Verification could include tests such as the tracing of a report through the corporate hierarchy, an examination of existing permits and records, physical inspection of operating facilities, or the analytical testing of end-of-the-pipe discharges in independent

laboratories. Obviously, the results of verification tests can have a strong bearing on the assessment rendered by the audit team, indicating a direct and somewhat dependent relationship between the two.

An effective environmental audit program will blend assessment and verification, through not necessarily equally. Such activities can occur throughout the audit process. Often assessment activities form the bulk of the audit program. Indeed, some environmental audits do not employ verification tests at all, as these generally raise the time and cost of conducting an audit. In this respect, the degree of verification employed by an audit can be an indication of the sophistication and maturity of the program and perhaps even of the firm which implements it.

A firm which approaches environmental affairs in the problem solving mode, with the management philiosphy of "keep out of trouble", might not even employ verification activities. If such a firm is only interested in meeting minimum requirements, verification activities present an additional and unnecessary burden. On the other hand, environmentally responsible companies who attempt to manage compliance will likely use a blend of assessment and verification in the audit program. These companies recognize that verification activities can lead to a more effective audit program and thus improved compliance management and environmental performance.

1.3.2 ENVIRONMENTAL AUDIT PROCESS

While the purpose, objectives, scope, staffing and protocol of environmental audit programs may vary considerably from firm to firm, the process of conducting an audit is relatively constant. Specifically, **audit organization and staffing, planning the audit, pre-audit preparation, on-site investigation, audit reporting,** and **follow-up and feedback procedures** are key components of the audit process. (Outlined below; see also Figure 2.0). There are a number of decision points both within and between these steps which allow for considerable variation regarding the structure, procedures and details of individual audit programs. Such latitude allows a firm to develop and implement an audit program tailor-fit to its precise needs, concerns, capabilities, and management culture.

(i) Audit Organization and Staffing

Before the audit exercise can commence, it is necessary to determine:

*the structure of the audit function and placement in the organization; level of managerial supervision

*lines of communication, reporting requirements

*audit team members; required skills and expertise

*team training

(ii) Planning The Audit

Planning the audit requires the consideration and resolution of a number of policy and design issues and questions. Among these are:

*budgeting and financial limitations

*identification of program objectives

*depth and scope of areas of review

*facility selection

*program phasing

*specific techniques and methods for data collection

(iii) Pre-Audit Preparation

Pre Audit preparation is important as it guides and streamlines the on-site investigation. Several techniques can be used to conduct preparatory activities, and the specific type and degree of preparation required will vary. In general, it should:

*review applicable regulations and policies to determine compliance requirements

*examine past records and reports

*inventory and document existing plant characteristics: facilities, units, processes, substances, layout

*develop an understanding of the internal control mechanisms, checks and balances

(iv) On-Site Investigation

On-site investigation is the heart of the audit process. Combining physical inspection and observation, inquiry, and testing, the on-site visit should:

*verify information collected during preparatory work (i.e. compare reported condition with actual condition)

*document existing environmental controls

*identify informal systems and practices

*assess overall environmental performance

*identify deficiencies not uncovered during prepatory work

(v) Reporting Audit Findings

Clearly established and specified reporting requirements and procedures ensure that appropriate levels of management receive the data and information which is relevant to their function and needs (Palmisano, 1983A:26). Generally, the report (whether written or oral) will provide an indication of:

*the overall effectiveness and specific deficiencies of environmental controls

*the current compliance status

*potential risks and emerging problems

*adequacy of emergency response, training programs

*general housekeeping concerns.

(vi) Follow-up and Feedback Procedures

Follow-up and feedback procedures ensure that identified deficiencies receive prompt and due consideration, action planning and follow through. Where deemed appropriate and feasible, corrective actions should be developed and appropriate steps taken to avoid similar discrepancies elsewhere in the company. (A.D. Little 1983A:14). Follow-up and feedback procedures should also include measures to determine the adequacy, effectiveness and efficiency of any corrective actions taken.

1.3.3 SUCCESS FACTORS - AUDIT MUSTS

Many factors will have a bearing on the ultimate success and effectiveness of an audit program. The financial resouces of the firm and the skills and expertise of the audit team members are two obvious examples. Many more evolve from those decisions outlined above. In addition, there are two 'features' of an audit program that, while not 'steps' per se, are nonetheless ingredients considered to be essential to an effective and successful environmental audit program. These audit 'musts' are **top corporate management** commitment and **clearly defined objectives.**

(i) Top Management Support

The environmental audit program must have the full support and commitment of top level corporate management, preferably transmitted in the form of a policy statement or directive. Such commitment adds legitimacy and weight to the audit program. It demonstrates

senior management's concern, thereby ensuring that the program will be taken seriously by all management and operating personnel and will command the necessary resources. It also defines the authority and responsibility of the audit team members and establishes expectations of other personnel. Such commitment may also serve to heighten the profile and importance of environmental matters in general among company employees. There is virtual unanimity among practitioners as to the importance of obtaining senior level commitment (see for example, Cutler, 1982; Basta, 1983; Kane, 1982; McIntyre, 1983). As one author observes,

> Without the active support (of top management) the audit will at best be inconclusive -- at worst, counterproductive. Lacking the support of senior management, it is likely that plant managers or others in a company's operating organization will view the audit as nothing more than a discomfort in some portion of the anatomy. (Penna, 1983:19).

There is also commitment of another sort worthy of mention. The environmental audit program serves and functions at three main levels of management -- operational, administrative and senior. Though audit information is transmitted vertically among these levels, each is served differently; different types of information are used, and more important, different decisions and actions evolve from the information used. Open communication between and among the various levels of management, particularly between administrative and operational levels, facilitates the collection and transfer of meaningful information and enhances the overall environmental audit program. It is desirable that these personnel engage in the environmental exercise with a certain degree of commitment.

(ii) Clearly Defined Objectives

It is essential that the basic purpose and objectives of the program are clearly and explicitly defined. Objectives have an important bearing on many aspects of the program, including its design, scope, staffing, protocols and indeed, overall success. Moreover, they provide the parameters against which program success can be evaluated. A.D. Little's Center For Environmental Assurance has documented a strong and direct relationship between the clarity of program goals and the effectiveness of the audit program (1983A). Objectives should be consistent with existing corporate objectives and must be compatible with the overall culture and management philosophy of the corporation. Not only does this give the audit team a clearer understanding of its role and responsibility but it also helps other affected constituencies understand the nature of the audit program.

1.3.4 AUDIT INFORMATION - SUBJECTS OF REVIEW

Verification of compliance with environmental regulations vis-a-vis air, water and land discharges, has been (and remains) the prime function and central focus of most environmental audits conducted in the United States private sector. However, the value of environmental audits extends beyond this role. A properly designed and executed environmental audit program will address many environmental related aspects and activities of a facility -- both of a "compliance" and "non-compliance" nature -- thereby providing the firm's management with an array of information from which

planning and corporate decisions can be made. This information serves a number of functions and, depending on how it is used, can lead to a number of benefits to the implementing firm.

Table 1.3.4, Environmental Audit Subjects of Review, outlines the functional areas that an environmental audit will examine. While this list is not exhaustive, it does provide an indication of the potential scope of an audit. Some programs go further still and attempt to integrate safety and worker health concerns, loss prevention, and others.

Note that any particular audit program is unlikely to produce all of the types of information described in Table 1.3.4. The precise type and depth of information gathered is dependent on the audit program objectives. Many audits are not as comprehensive and extensive as the list might suggest. Often, they focus on specific regulations, substances, and/or media effects.

1.3.5 ENVIRONMENTAL AUDITING PRINCIPLES

Environmental auditing is a new endeavour, and much of its "theory" is being developed through the documentation of current practice. Environmental auditing did not, however, emerge from a vacuum. Initially, it borrowed from other practices of evaluation and review -- financial accounting and auditing being the most significant.

While it is reasonable to expect that the current "individualized" approach to conducting an environmental audit will eventually become more standardized, there are at present no 'generally accepted environmental auditing principles'. Presented

TABLE 1.3.4

Environmental Audit Subjects of Review

Regulatory

- *Permits and regulatory requirements (air, water, land, noise, transportation)
- *Monitoring and recordkeeping procedures
- *Reporting and notification (external) procedures
- *Waste generation, storage, transportation, disposal
- *Hazardous substances
- *Contingency planning; emergency response
- *Third party actions

Company - administrative

- *Corporate and plant-level policy, communication of
- *Internal notification and reporting
- *External communications, local associations
- *Training programs
- *Filing systems
- *Informal systems and internal controls
- *Complaint handling, sources and response
- *Internal organization: environmental authority and responsibility
- *Environmental operating and capital costs
- *Employee awareness

Company - technical

- *Facility inputs (raw materials) and outputs (products)
- *Onsite/offsite facilities
- *Operating practices (start up, shut down)
- *Pollution control facilities and equipment
- *Laboratory equipment, protocols, procedures
- *Routine maintenance and repairs
- *Inspection and calibration of monitoring and pollution control equipment
- *Environmental incidents and follow up activities
- *Loss prevention

below is a discussion of some of the existing principles and precepts which underly and direct the design, implementation and conduct of an environmental audit. These do not appear in any one single source. Rather, they have been extracted, modified and developed from a variety of sources.

(i) Independence

To maximize its effectiveness, utility and credibility, the audit must be an objective and independent analysis. Measures should be taken to ensure that auditors are given, and are seen to be given, independence within the corporate structure. The auditors must also be independent of the activities which they audit -- both in fact and in mind.

> Such independence permits the auditors to perform their work freely and objectively. Without independence, the desired results of auditing cannot be realized. (Institute of Internal Auditors in The Environmental Audit letter, Vol 1, No. 7, 1983:2).

Cutler identifies three categories of impediments to independence: physical, organizational and personal. Further, he describes five ways of enhancing independence:

1. The audit program must have the authority to perform its function.

2. The objectives, purpose, responsibilities of the environmental auditing programclearly stated and communicated to the organization.

3. Management should be advised of budgets, staffing needs and audit schedules, as well as results.

4. An auditor should never review his own work or areas of responsibility.

5. Audit work should be reviewed for objectivity prior to the release of the audit report.

(Robert Cutler, in the Environmental Audit letter, Vol 1, No. 7, 1983:3).

The use of external consultants would maximize objectivity and independence. On the other hand, the use of in-house personnel may be the better choice since they are most apt to be familiar with company operations and informal systems and can thus render a more insightful perspective. The pros, cons and trade-offs associated with each of these approaches is discussed more fully in Chapter 2.

It is important to note that 'independence' should not be interpreted as it is in external financial auditing. Environmental auditing is not conducted for the purpose and benefit of third parties (government agencies) and it should not be treated as such. An environmental audit is an internal management concept.

(ii) Evidence

The gathering of proper and appropriate data and information ("evidence")* forms the basis and support for the assessment and verification of environmental performance. Evidence can and should be of several types, including physical, documentary or circumstantial. (A. D. Little, 1983B:33). Sources of audit evidence include observation and inspection of facilities, practices, procedures, records, and reports; inquiry, using checklists, questionnaires, formal and informal interviews; and testing and sampling.

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*Evidence should not be interpreted here as it is within the legal profession. Evidence does not necessarily mean "proof".

(iii) Materiality

An environmental audit should identify, document and report significant or 'material' evidence. In accounting, materiality refers to the relative and absolute importance of an item and is often measured in terms of its implications for third parties. In environmental auditing, materiality should be evaluated in terms of the item's relevance to various internal constituencies and management levels. In a general sense, any information generated which would contribute to the achievement of stated objectives or in some way aid the evaluation should be considered material. There may be fine line between material and immaterial evidence, since the relationship between decision-making and environmental perturbations is not always direct or quantifiable. Definitions of materiality should be developed, clearly understood, widely accepted and communicated. "Environmental auditors should not have to decide unilaterally what is important -- that is what management is for." (A. D. Little, 1983C:10).

(iv) Disclosure

Material findings and evidence should be disclosed in a meaningful and useful way to relevant constituencies in the corporate hierarchy. Inadequate disclosure amounts to the withholding of data and information. This results in a false representation of the environmental state of the corporation and serves to undermine the very intent and credibility of an environmental audit. Practically, the environmental audit will be

of little value if significant findings are not disclosed and communicated to appropriate personnel.

There is considerable debate among practitioners as to how audit results should be disclosed and reported. Some companies are reluctant to document findings in a formal written report for fear of sensitive information being inadvertently released to the wrong people and ultimately being used against the company. If the company were to document incidents of non-compliance with regulations, or a deficiency with other legal, ethical or social responsibilities, it might be used against them in criminal or civil prosecutions. Such companies may prefer to disclose audit findings to appropriate personnel orally, and on a more informal basis. In general, findings should be disclosed in a manner consistent with corporate philosophy and reporting procedures for other comparable information streams.

(v) Consistency

Consistency refers to the establishment and consistent application of procedures, techniques and decision criteria within the audit program. Facility targeting, selection of areas of review, on-site techniques, reporting and follow up must be applied consistently from facility to facility. In the accounting sense, consistency implies that the same basis for conducting an audit and arriving at conclusions is applied from audit to audit, allowing for an equal comparison of audit results on a continual basis.

(vi) Integration

Environmental audits are unlike other program and facility reviews in several respects, due largely to the very nature of environmental affairs and indeed, natural ecosystems. Natural laws reveal that environmental systems are characterized by integrated, interrelated and interdependent components which 'operate' within a larger system framework; individual components cannot be treated in isolation of one another without affecting other parts of the system. The implications of this for environmental auditing are twofold.

First, environmental audits should adopt an integrated approach to evaluation. While individual assessment and verification activities will likely focus on specific components of the system, such as certain regulations, substances or medium effects, the larger environmental framework within which these components exist should be kept in mind. The interconnectedness of pollution abatement and environmental matters must be carefully examined; the correction of a problem in one medium may lead to the creation of a problem in another.

The second implication relates to the notion of 'micro' and 'macro' systems: systems within systems, so to speak. Environmental auditing, for example, is one component of a firm's overall environmental management system; that system itself is a component of the larger corporate 'system' (production, marketing and strategic planning might be other components). In the corporate setting, the effectiveness of decision-making is increased when information yielded from each component is integrated at the higher

level. Environmental auditing information must be integrated with risk assessment, compliance assurance, impact assessment and other environmental functions. At the next level, environmental information must be integrated with operations, production, financial, social and other considerations. Environmental auditors must be wary of how the information is to be used at higher levels.

(vii) Line Involvement

There should be a deliberate attempt to include line personnel in the auditing decision-making. The more the line organization is involved actively in decisions concerning,

a) which areas of performance are to be audited;

b) how the information is to be gathered and used;

c) to whom the information is to be given;

the more helpful and effective the auditing function will be. (Schein, 1969:142). Without such involvement and cooperation, the traditional "tension" between the auditees and auditors may be nurtured. This could result in dysfunctional consequences such as the hiding of problems and imperfections or the falsifying and distorting of information.

(viii) Working Papers

This is an umbrella term for all of the written materials used and generated during the audit process. In terms of evidence (data, information), working papers might include notes on observations, inspections, conversations, meetings; completed questionnaires and checklists; descriptions and findings of transactional and functional tests; draft reports; memos and communications; etc.

Arthur D. Little's Center for Environmental Assurance describes the purposes of working papers as follows.

> 1. To and the auditor in providing documentation that an adequate audit was done. That is, the goals of the audit were met.
>
> a. The information in the workpapers should substantiate the auditor's conclusions, especially if there is a problem.
>
> b. If the auditor concludes that the facility is in compliance, working papers must show that the audit was "reasonable".
>
> 2. To act as a supplement to the audit protocols by providing details of the audit plan.
>
> 3. To provide a rationale for the auditors approach to collecting evidence.
>
> 4. To show how tests (examination of records, "paper trail" test) were done.
>
> 5. To supply data for subsequent action.
>
> 6. To provide a basis for review of the audit by the team leader. (in Environmental Audit Letter, Vol. 1, No. 4, 1983:4).

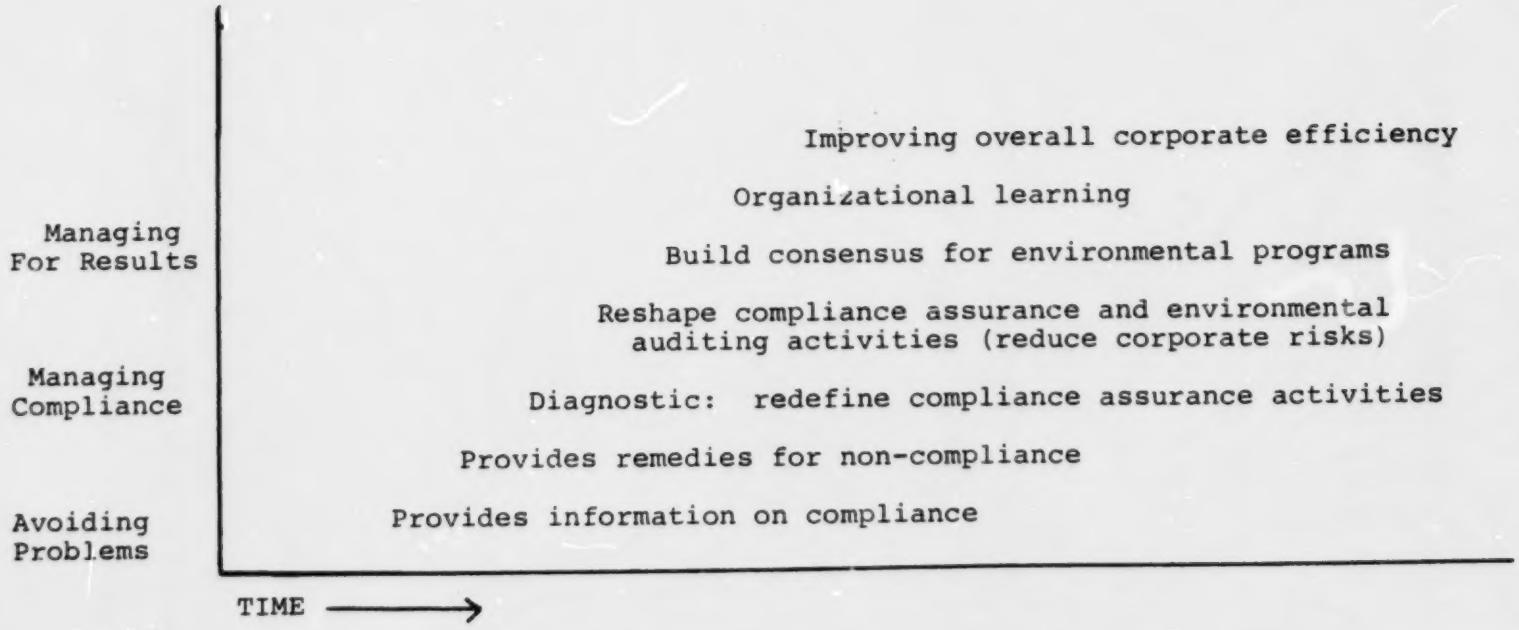
1.3.6 ENVIRONMENTAL AUDIT MATURATION

Environmental auditing is an emerging and fluid process; its structure and procedures are continually evolving and being redefined. Reasons for developing an environmental auditing program vary. Often, the immediate goal of an auditing system is reactive -- to identify problems, correct problems, or respond to an environmental emergency. As familiarity with the program increases, higher level goals are pursued. Palmisano observes:

> An audit system will change over time. All systems evolve. Auditing activities, whether initiated in house or by consultants, will evolve to higher levels of sophistication. Auditing programs, therefore, should be developed with an understanding that uses and demands on the system will mature. (1983A:24).

Figure 1.3.6 illustrates that as a firm's environmental management philosophy moves from one of reactive problem solving to one of of proactive anticipation, the uses and goals of auditing change as well.

FIGURE 1.3.6 MATURATION PROCESS OF ENVIRONMENTAL AUDITING PROGRAMS



Source: Palmisano. 1983.

2.0 CONDUCTING AN ENVIRONMENTAL AUDIT

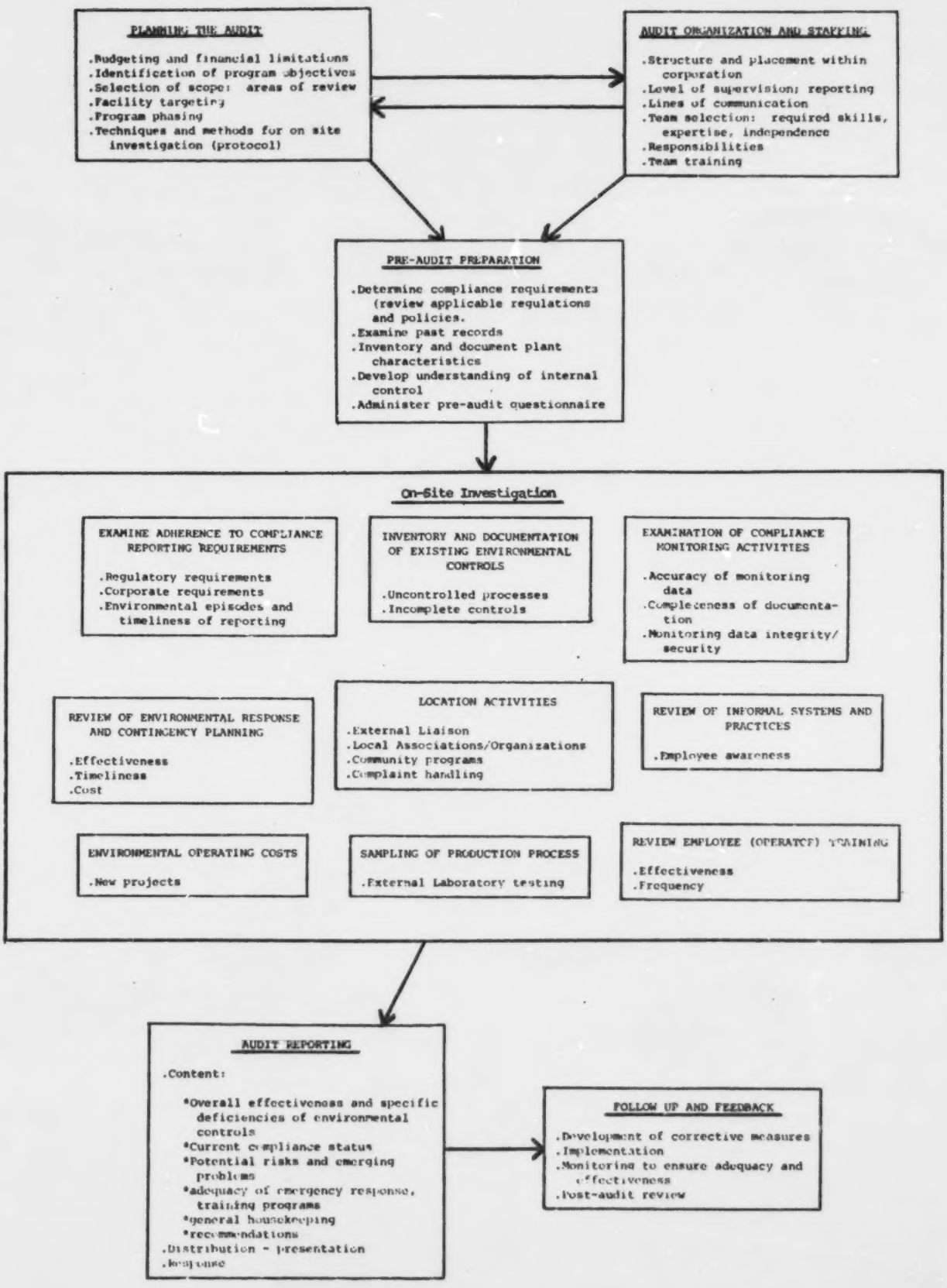
Deciding to implement an environmental audit program may be the easiest decision the firm has to make, for once that decision is made, it is faced with a host of policy and design options and issues, all of which relate to one central question, "How should we conduct our environmental audit?"

There is no model approach to conducting an environmental audit; an approach well-suited to one firm may not be appropriate to another. Most programs are tailer made to fit the specific needs, structure, capabilities, resources and management philosophy of the implementing firm. Individual programs are as distinct and unique as the companies who implement them, differing in their objectives, scope, staffing, protocol, reporting, and so on.

> The state-of-the-art has not yet progressed to the stage where a "model" auditing technique can be singled out. In the absence of established standards or generally accepted environmental auditing principles, corporations are finding that at each step in auditing design there are many decisions to be made. And even the most subtle distinctions with regard to auditing technique can affect the design and implementation of the system. (A. D. Little, 1980:1).

Discussed in this chapter are the major steps involved in conducting an environmental audit. They are outlined in Figure 2.0. They have been assembled and adapted from existing private sector environmental auditing programs as well as from a review of U.S. E.P.A. papers, trade association surveys, and assorted published materials.

FIGURE 2.0 THE ENVIRONMENTAL AUDIT PROCESS



Not all sources reviewed advocate the same steps. Discrepancies appearing among and within these sources are largely a reflection of the particular emphases and different objectives of each audit program. To a lesser degree, they are also a function of the firm's and the author's conception of what a 'step' or 'component' is; often, the same idea is expressed differently or discussed elsewhere in the account. For example, the words "components", "steps", "elements" and "parts" often refer to the same idea.

Note that the auditing process is not always as linear as the following discussion might indicate. This is particularly so for the first two steps -- audit organization and team staffing, and planning the audit -- where issues and questions regarding budgeting, staffing, organization, objectives, areas of review and so on are addressed in various sequences, often simultaneously.

2.1 AUDIT ORGANIZATION AND STAFFING

Before the audit exercise can begin, a number of issues must be resolved. These range from the appropriate structure of the audit function and its placement within the organization, the appropriate management level of supervision and lines of communication to the selection of team members, team development and operating procedures. Such factors will have an important bearing on the capability, integrity, credibility and ultimate success of the exercise

2.1.1 ORGANIZATIONAL ISSUES

In a paper entitled, "Can You Trust Your Environmental Auditing Program?" (Marcus and Nadel, 1983) the authors cite "organizational capability" and "organizational integrity" as being two important organizational concerns that have an influence on the effectiveness and success of a corporate auditing program.

Organizational capability refers to whether or not the environmental auditing program has the capability to achieve its objectives. It is influenced by: the objectives; its tasks and performance indicators (should have indicators to assess success); staff qualifications (procedures to verify competency and train members); budget (amount and adequacy). (Marcus and Nadel, 1983:1)

Organizational integrity refers to whether the environmental auditing program has the organizational power and independence to achieve its goals. Indicators of integrity include: structure and placement within the organization (can be permanent or temporary and ad hoc -- a permanent program is likely to provide a firmer basis); management level of organization (should be high enough to be taken seriously); internal authority; autonomy; recruitment and exit processes (career paths); and external relations (with professional peers). (As above)

The most appropriate organizational design for a particular company's environmental auditing program will depend on the number, type and location of operating plants, on the overall organizational structure of the company, and on the previous environmental record of the company (for example, more resources may be needed if the company has a history of environmental problems). Whichever

organizational design is chosen, in addition to those items listed above, the following should be established:

*a formal system of controlling and organizing the work

*relationships within the program and between it and other organizational components

*lines of communication and reporting structure

*roles and responsibilities of environmental auditing units and personnel; expectations of other personnel

*rotational policies, career paths, and provisions for the training and retraining of audit officials

*accountabilities of auditing and management personnel

2.1.2 SELECTING THE AUDIT TEAM

There is virtual unanimity among sources of information reviewed -- case studies, trade association surveys, U.S. E.P.A. papers, and assorted published materials -- as to the importance of the audit team selection*. It can affect objectivity, credibility, cost and scope. (McIntyre, 1983:1). The overall quality of the audit program is a direct result of the competence, training, expertise and proficiency of the audit team members. (A. D. Little, 1983A:8). The most important considerations are **a)** who conducts the audit (in-house (plant, corporate) vs. outside (consultant) personnel) and **b)** the skills and expertise required to conduct the audit. Selecting an audit team can be a difficult task. Each decision point involves a number of competing advantages

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*Although reference to an audit "team" will be made throughout this paper, the audit exercise can be conducted by an individual. Most of the literature reviewed, however, indicates that a team (two or more members) is the norm.

and disadvantages which must be balanced against the overall needs and objectives of the audit program and corporation as a whole.

A. D. Little provides an enlightening example of the tradeoffs resulting from these competing interests and concerns:

*If Plant Environmental Managers were asked: "Who should not conduct an environmental audit of an operating facility?"

The four most frequent answers would be:

*Outside Consultants
*Corporate Auditors
*Corporate Lawyers
*Corporate Environmental Managers

Thus, the most **most desired** auditor would be the plant manager.

*If the Board of Directors were asked: "Who provides the most credible, independent view of a plant's performance?"

The four most frequent answers would be:

*Outside Consultants
*Corporate Auditors
*Corporate Lawyers
*Corporate Environmental Managers

Thus, the **least credible** auditor would be the plant manager.

*Herein lies the dilemma:

The most credible auditors are the least desired.
The most desired auditors are the least credible.
(1983B:48-54).

Audit team staffing should be consistent with the audit program's purpose and objectives. These have a strong bearing on the need for independence and objectivity, audit team size, necessary expertise and status of staff (full-time or part-time).

A. D. Little's Center for Environmental Assurance identifies the following as important considerations when selecting audit team members.

*What is the purpose of the audit? What staffing requirements are implied by the goals and objectives?

*What are the audit program needs for reliability and credibility, especially in terms of reporting?

*What is the degree of independence desired?

*Is the audit staff large enough to provide the audit coverage desired by management and prescribed by the audit program?

*Does the audit team have the necessary expertise, training and experience to conduct the audit?

*What are the program's needs for personnel commitment and audit-to-audit continuity?

*Do team members have the necessary freedom from organizational pressures to assure adequate objectivity? (1983A; 1983B).

(i) Expertise, Skills, and Experience

Audit teams tend to draw from a variety of disciplines and backgrounds, providing a diverse assemblage of human resources. An audit team may, though not necessarily, consist of (or have input from) accountants, financial (internal) auditors, engineers, toxicologists, lawyers, doctors, land use experts, environmental managers, hydrologists, technicians and so on. The composition is dependent on several factors -- realistic limitations on available 'human' and financial resources are the most obvious.

Robert Cutler of Olin Corporation identifies audit team/director proficiency as one of two essential elements of an effective environmental auditing program (independence is the other), (in Environmental Audit Letter, Vol 1, No 7, 1983;1). Proficiency is defined as having the skills, knowledge and experience required to perform a function. According to Cutler, many companies underestimate the quantity and type of skills, knowledge and experience needed to conduct an environmental audit.

> The skills, knowledge and experience of the auditors and the audit director should include the technical, organizational and interpersonal skills required to fulfill the charter of the organization. The knowledge and experience of the people should be commensurate with the needs and scope of the program. (Cutler, in Environmental Audit letter, Vol 1, No 7, 1983:5).

The combined audit team should have knowledge and expertise of the technical equipment and management systems and controls of operating facilities. This includes both a knowledge of the 'hardware', that is, of manufacturing facilities, operations, processes, pollution control technologies and equipment, as well as of the 'software', that is, of environmental (and other) management systems at the senior, administrative and operational level.

It is also important to have an audit team member who is familiar with the facility being audited. This need could perhaps be met by outside persons with familiarity of peer facilities or companies. However, someone with an intimate familiarity with the local operation and personnel can not only provide useful insight into the many informal existing controls (technical, management) and local problems, patterns or trends, but can also help to encourage and obtain cooperation and effective, meaningful communication from

local personnel.

The audit team should also have a knowledge and understanding of regulatory requirements and other legal considerations. To determine and interpret compliance status, knowledge of compliance requirements is essential. In fact, whether or not responsibility for the audit is given to legal counsel is a critical decision for several companies.

> An environmental audit may be viewed and treated as a management function. However, a basic element of the inquiry -- whether the corporation is in compliance with the law -- is essentially a legal question. Any inquiry into compliance brings with it attendant concerns associated with non-compliance, including vulnerability to governmental or private enforcement litigation, to civil or criminal penalties and other potential liabilities. (Truitt et al, 1981:56).

Whether or not legal counsel is employed has significant implications with regard to the issue of confidentiality. To assure legal protection of information through the attorney-client privilege, legal counsel must have a significant role throughout the audit process. However, even if legal counsel is not given responsibility for the audit, there should still be legal input. If such expertise is not part of the audit team, then it should be "imported."

The audit team should also have the necessary scientific background and expertise to identify potential environmental risks and hazards. This could include environmental and natural sciences, such as biology, geography and geology, as well as health and medical disciplines, including occupational and public health, industrial hygiene and toxicology.

The audit team should also have the appropriate experience, knowledge and training in auditing techniques, methods and procedures. This ensures that the audit examination is consistent with company objecties and in conformity with the general state-of-the-art of environmental auditing, and that audit resources are used in a manner that maximizes the effectivness of the audit and the reliability of findings. (A. D. Little, 1983A:11).

In addition to these more or less objective forms of expertise, a rarely stated (but often assumed or implied) expertise concerns the audit team's communication and interpersonal skills. A large part of the audit process, particularly the documentation of internal controls and the gathering of evidence, is a human function. It requires an auditor's inherent ability of being able to relate well with other people. Auditor's should be trained in interviewing techniques and be able to communicate and ask questions that elicit cooperation, stimulate dialogue and establish a friendly rapport.

The "Environmental Quality Assessment" program of the Pennsylvania Power and Light Co. has an auditing staff of six full-time people (one modeler and five auditors). Two auditors are assigned to nuclear activities; three to non-nucleur activities. The five auditors nave technical backgrounds in areas such as: chemistry, radiochemistry, biology, geology, mechanical engineering, water and wastewater treatment, air emissions, quality assurance and toxic substances. The nuclear auditors are ANSI certified and the three fossil auditors are certified visible-emission evaluators. (Pennsyvania Power and Light Co., in Environmental Audit Letter, Vol

1, No 5, 1983:5).

Olin Corporation's environmental auditing program consists of five full-time staff members who are all experienced managers with engineering and technical backgrounds; each have worked in the plants and are familiar with operations. All have been trained in auditing techniques and are well-versed in the technique of asking questions in ways that elicit cooperation and stimulate dialogue. (Olin Corporation, in Environmental Audit Letter, Vol 1, No 1, 1983:7).

(ii) Independence

When selecting the audit team, corporate management has three main options: **a)** use in-house personnel; **b)** use outside (consultant) personnel; or **c)** use a combination of the two. Each has its advantages and disadvantages.

The use of in-house personnel is desirable because they are more familiar with company operations. No two audit sites are identical. The particular history, product line, topography, location, worker relations, work flow, manufacturing process, community relations, financial considerations and worker/management traditions of any one site may call for nuances of approach to the audit. In this regard, the unique knowledge of the insider is vital. (Truitt, et al. 1981:64).

Assuming that a corporation is developing the audit program as a regular and ongoing activity, internalizing the audit program provides other advantages. First, it institutionalizes the process, thereby ensuring that an awareness and concern of the environmental audit is prevalent throughout the corporation (Truitt et al.,

1981:64). As a long-term activity, the development of internal expertise and the building of a permanent in-house team is likely the most cost-effective choice as well. The environmental auditing field is still in its infant stages -- it is a learning process for everyone. So why should a firm spend money developing and promoting someone else's expertise when it could spend it developing its own?

Internalizing the audit also provides more flexibility for procedural and substantive change throughout the audit program. Moreover, it may improve or even open communication channels within and between corporate divisions and departments, because of the many departments that may be consulted during the process. Effective communication and exchange of information can only lead to an improvement in management effectiveness and day-to-day business operations.

Another advantage of using in-house personal concerns secrecy: Trade secrets and other valuable proprietary information involved in an operation could be lost to the ouside consultant (Gibson and Fahrenthold, 1983:39).

The most obvious advantage in using outside personnel are degrees of independence, objectivity, and credibility accorded to the audit program and final report. In theory; in-house auditing teams should have independence from the activities they audit. However, this is not always possible or practical to achieve: the people most capable of performing the audit in-house are often those who have been, and will continue to be, carrying on the company's environmental programs. (Gibson and Fahrenthold, 1983:39). As a rule, outside auditors are detached from the operations as a whole,

enabling a larger and more objective perspective of the company's operations. While the in-house team may not see the forest for the trees, the external team should see both.

By and large, an ouside audit team will have more resources to draw upon and will thus bring a level and depth of expertise and experience not found with in-house personnel. Presumably, this would provide for a more comprehensive and diverse environmental audit (particularly in terms of areas of review) and overall, for a more effective and revealing evaluation of management and technical controls and environmental performance.

There is a third option, and for many companies, it may be the best: a combination of in-house and outside personnel. This might consist of using an experienced outside consultant to design and establish the audit program and to train the in-house personnel, who then conduct the audits. This option would appear to resolve the conflict of on the one hand, wanting to internalize the audit process and build in-house expertise and on the other, not having the personnel with the required skill, knowledge and experience.

2.2 PLANNING THE AUDIT

Planning and designing the environmental audit program demands the consideration and resolution of a number of policy and design issues and questions. These include the financial limitations of the audit and related budgetary considerations, the identification of program objectives, the targetting of facilities , the scope of the program (areas of review) and the scheduling of audits. Planning the audit is a dynamic and iterative process; it will both

determine and be determined by a number of factors.

2.2.1 BUDGETING

Budgetary limitations will influence the scope and depth of the audit, staffing, the utilization of manual rather than computerizeed information systems, and the degree to which onsite personnel are used in the audit as opposed to having company personnel from other locations move from site to site. (Truitt, et al, 1981:59). Once the budget as well as other resouces such as time and expertise have been determined, the planning of the audit can commence.

2.2.2 IDENTIFICATION OF PROGRAM OBJECTIVES

The objectives of the audit program are pivotal. They have a profound influence on every facet of the program, including its cost, design, scope, staffing, procedures and overall success. It is no small coincidence that clearly defined objectives were identified as an audit 'must'. Program objectives must be established early in the process, presumably by upper management, corporate environmental affairs and core audit team members.

A. D. Little reports that the objectives of environmental auditing programs can be divided into five broad categories.

> *To provide independent verification of compliance with regulations and permits, corporate policies and procedures, good operating practicies and good reporting requirements.
>
> *To provide assurance to management that operations are consistent with good practice, that systems are in place and operating and that legal and ethical responsibilities are being met.
>
> *To provide information that helps managers improve their

performance, that educates selected staff about environmental matters, that gives management an overview of operations and that identifies potential issues or future problems.

*To provide ways to save money by anticipating future costs an acting to avoid them and by preventing losses.

*To provide means to avoid, solve and anticipate problems and show due diligence. (1980:4).

Audit objectives must be designed with the needs and expectations of the Board of Directors, Chief Executive Officer and other corporate officers in mind. They must also be consistent with other existing corporate objectives and policies, as well as with the corporation's culture, values and overall environmental management philosophy. Management philosophy evolves and matures through three conceptual stages. Each of these are reflected in the following examples of companies with different environmental management philiosophies. (A. D. Little, 1983B).

1. A company in the first stage is in the problem solving mode. The focus is on solving immediate problems, ("putting out fires"), complying with necessary laws and regulations, and identifying (and managing) significant environmental risks. The philosophy of the program, largely managed at the plant level, is to "Stay Out of Trouble". The environmental audit program objectives selected must be compatible with this philosphy.

2. In the second stage, a company manages its compliance by setting performance standards or goals and then managing against them. Developed with the philosophy

"Stay in Compliance" in mind, programs are managed at the corporate level and implemented at the plant level. Audit programs focus on all applicalbe laws and regulations and identify and manage all known hazards. Objectives developed by this firm must reflect this culture.

3. In the third stage, the most mature and sophisticated, a company is socially and environmentally responsible and is characterized by the philosphy "Stay Ahead of the Pack". In addition to conducting programs and practices similar to those conducted by companies in stage two, this company seeks to identify, minimize and manage all known hazards and to detect unanticipated and future hazards. Objectives in this mode must be suitably developed. (A. D. Little, 1983B:9).

The word "objective" implies an end towards which effort is directed, and should be stated in terms such that performance or achievement is measurable and success can be evaluated. It is crucial that objectives of an environmental audit program be realistic and achievable. Consideration of the firm's available resouces and capabilities is warranted. Presented in Table 2.2.2 is a list of potential objectives for an environmental audit program. While they are not inherenty mutually exclusive, given the realistic constraints faced by a company and company's differing information needs, requirements and desires, it is highly unlikely that a single environmental audit program would address all objectives.

Table 2.2.2 POTENTIAL OBJECTIVES FOR ENVIRONMENTAL AUDITING PROGRAMS

*Determine and verify compliance with appropriate federal, state/provincial and local laws and regulations.

*Determine and verify compliance with corporate policies and procedures.

*Provide assurance to management that systems for managing environmental affairs are operating effectively.

*Improve the overall level of environmental awareness among officers and employees.

*Determine the current cost of compliance with environmental requirements.

*Determine future expenditures for environmental compliance and identify potential cost savings.

*Identify and detect unforeseen environmental risks and hazards (early warnings).

*Improve communication between corporate management and operating

*Enable comparison between operating facilities and identify shared problems/solutions.

*Assist facility management in identifying and correcting compliance problems.

*Assure adequate, up-to-date environmental data base for internal management awareness, decision-making and regulatory requirements.

*Provide definite material for positive public relations and show due diligence.

*Evaluate existing employee training programs and provide a comprehensive data base which can aid in training personnel.

*Develop an information base to be used in emergency situations and crisis management.

*Assess and increase the effectiveness of emergency response activities.

*Improve the overall environmental performance of operating facilities by reducing and containing environmental problems.

*Accelerate the overall development of environmental management and control systems.

*Avoid corporate and corporate officer liabilities and enforcement proceedings and to minimize fines.

*Develop information base necessary for SEC disclosure requirements.

(Truitt, et al 1981:8-23), (Penna, 1983:17), (A. D. Little, 1980:4), (A. D. Little, 1983D:14).

2.2.3 FACILITY TARGETING

For corporations that have more than one operating facility, it is necessary to determine which facilities are covered by the audit program. Does the program apply to all company facilities, or just selected ones? More important, how are facilities selected -- what are the criteria for choosing one facility over another? Even if a firm will eventually audit all facilities, phasing in the program still requires that a selection decision criteria be established. Palmisano identifies "established criteria for selecting audit targets" as a key element of an environmental audit program, stating that the program must have criteria for selecting specific facilities, products, or environmental control policies and procedures that are targeted for an audit. (1983: 25).

Decision criteria could include the quality of existing information at each plant, information obtained from previous audits and degree of past scrutiny by corporate headquarters, facility compliance status reports, number of past enforcement actions or non-compliance problems, age and size of plants, location (proximity to public areas), known problems, perceived risk, types of processes conducted, expenditures on pollution control equipment, resource

availability, outside complaints, etc. (Palmisano, 1983A:25; Guida, 1982:570).

A review of existing program profiles and available literature has indicated that environmental audit target decision criteria are often vaguely defined and informally applied. In fact, facility selection is often based on subjective and arbitrary considerationss -- especially when the first facility is selected -- such as the anticipated and desired success and results of the audit. In other words, a company may select a facility with a good operating record and no known problems to ensure that the audit process and report is perceived as being positive and favourable, thereby encouraging support and interest on a more widespread basis throughout the corporation and among other operating facilities. Selection may also be a direct consequence of the familiarity with a given facility of audit team members. As the audit program developes and matures, consisting in selection must be applied through a given set of decision criteria.

2.2.4 AREAS OF REVIEW

The scope of individual audits, that is, the particular areas of review, define the boundaries of the program and should be established early in the process. Areas of review will be determined by the objectives of the program, and could include: environmental regulations; company policy; operating procedures; monitoring, record keeping, and reporting; internal controls; employee training; emergency response; maintenance; external communication; and so on. (Refer back to Table 1.3.4 for a more

detailed list).

The depth of areas of review can vary from firm to firm. Should the program be comprehensive in design, that is, cover all the bases and examine all regulatory requirements, all substances, all discharge points, all media effects, all internal controls, or all communications? Or should it focus exclusively on specific regulations, specific substances, single media effects, or particular internal controls? Both approaches (comprehensive versus selective) -- and every combination in between -- have been used by various companies. The kind of process adopted (e.g., comprehensive versus selective) is itself an important audit design question.

The specific depth and scope of analysis will be influenced by a number of factors, including the purpose and financial limitations of the audit, the capabilities and expertise of audit team members, and the nature and characteristics of the audited facility. Guida observes that,

> ..many companies have the resources to perform a very effective audit on a limited basis, but only a superficial one on a more general basis. (1982:569).

Given that most firms whill not have an ultimited mandate and resources to perform the audit, the partial audit (scope-wise) is a realistic option. Whatever the scope is, the selection of areas of review must be based on a set of consistently applied decision criteria.

Allied Corporation, for example, focuses its audits on one of six "review subjects":

*Water Pollution Control and Spill Prevention

*Air Pollution Control
*Solid and Hazardous Waste
*Safety and Loss Prevention
*Occupational Health and Medical
*Product Safety
(Allied Corporation, in A. D. Little, 1983B:126).

Two points are worth noting about Allied's program. First, while the overall corporate program appears comprehensive, individual facility audits only examine one of the six review subjects. Thus, the 'environmental picture' rendered by the audit will never be complete and could have major and potentially serious omissions. Second, Allied extends its 'environmental audit' into the areas of occupational health and industrial hygiene and safety, as revealed by the program's title, "Health, Safety and Environmental Surveillance Program". Indeed, the combination of environmental and occupational health and safety considerations is receiving increasing attention lately. Aside from the direct link between environmental and occupational health considerations, there are reasons why these functions should be integrated at the corporate level -- efficiency, control and cost to name but a few.

2.2.5 SCHEDULING

Some firms will conduct an environmental audit on a one-time, "snap-shot" basis. While "snap-shot" audits necessarily look back into past practices, such as waste management, and should identify potential liabilities arising out of current or past practice, they have the potential to become quickly outdated, particularly if the company is growing (Truitt et al, 1981:2). Furthermore, they may not aid in revealing the development of new problems. (Guida,

1982:5710).

Consequently, most firms will elect to conduct their audits on a regular 'on-going' basis. The need for top management to be aware of compliance status, environmental performance and management effectiveness is a continuing one and is best satisfied through the periodic auditing of its operating facilities. Moreover, periodic audits may be useful in identfying recurring problems, trends and, potentially, improvements in performance.

A firm must set a time interval between audits that is both meaningful and fiancially reasonable. It should be such that sufficient time is allowed to design, implement and monitor corrective actions, but not so much time that new problems can arise and develop to unmanageable proportions: a period one to three years would be reasonable.

A rule of thumb might be to start small -- begin the program slowly and expand it over time. Many companies with existing programs have adopted the "phase-in" approach. These programs began by emphasizing only certain facilities, or certain regulations and/or environmental media at those facilities, and over time, were expanded to address more facilities and more regulations and media effects at those facilities. The phase-in approach has several advantages. First, audit team members, plant managers and top management become accustomed to and comfortable with the program. Second, there is less disruption of day-to-day company operations. Third, problems with the audit design can be detected and corrections can be made in the program without creating significant problems for the company. (Penna, 1983:20). Moreover, there is

time to assess the program (to audit the audit) before financial resources are fully committed. The appropriateness of a deliberate incremental strategy for any one company must of course be decided on a case-by-case basis.

2.3 PRE-AUDIT PREPARATION

Considerable preparation must be carried out before the actual audit occurs. Evaluation, assessment and verification activities require an intimate familiarity with what is being evaluated, assessed and verified. Equally important is a familiarity with the "ideal" condition against which we measure.

2.3.1 COMPLIANCE REQUIREMENTS

The scope, breadth, and complexity of environmental regulations facing corporations today can be staggering. Practically all facets of a firm's activities are regulated. Understanding environmental law can be a difficult task, for much of it is neither rationally organized nor logically patterned. (Truitt, et al, 1981:70). But in order to determine compliance status, audit team members must be familiar with the regulatory framework within which the company operates, the specific laws and regulations that are applicable to the company's operations and the requirements of those regulations. Inasmuch as no team member will have all of the necessary knowledge, this regulatory preparation will likely require input from a lawyer.

2.3.2 FACILITY CHARACTERISTICS

Interpreting regulations and determining their applicability will of course depend on the team's familiarity with the technical and physical operations of the plant in question. The audit team must be familiar with the characteristics of the plant, including the chemicals and substances imported, stored, processed, emitted or disposed of (regulated substances), the specific on- and off-site facilities such as operating units, smokestacks, incinerators, pipes, discharge points, waste treatment systems, etc. A blending of these two information pools -- characteristics of the plant and relevant environmental requirements -- helps to establish, at least on a preliminary basis, the basic elements of analysis in the environmental audit.

2.3.3 INTERNAL CONTROL SYSTEMS

In the environmental context, internal control refers to the informal and formal means, systems and procedures that an organization institutes to direct, control and check upon its environmental activities. It consists of a variety of checks and balances designed to detect and prevent discrepancies between external legal requirements and internal policies, procedures and objectives. Included are management or administrative controls ('software') as well as mechanical or technical controls ('hardware'). To perform a proper assessment and verification of these controls, the audit team must understand them. Developing such an understanding of the internal control is an ongoing and

iterative process and will likely occur at various stages throughout the audit process. It is important to establish at least an elementary understanding as early in the audit process as possible.

There are several tools and techniques that an audit team can use to conduct preparatory work and develop an understanding of compliance requirements and internal controls. These include:

*Review of printed materials and internal documents, including past reports, records, regulations, policies, job descriptions, process flows, reporting requirements, etc.

*Formal briefings by appropriate personnel and/or discussions/interviews.

*Performing limited and simple tests of verification on selected events and controls.

*Pre-audit questionniare.

2.3.4 PRE-AUDIT QUESTIONNAIRE

The "pre-audit questionnaire" can be used to document and generate a variety of information and can be a valuable feature of the overall corporate environmental auditing program. The role and importance attached to such questionnaires varies from firm to firm.

In accordance with the scope and objectives of the audit program itself, the pre-audit questionnaire can be used to develop information about any of those areas of review identified in Table 1.3.4. The pre-audit questionnaire andThe information it provides can serve a number of valuable functions. For example, it can:

*be an important tool in the audit team's **preparation** for the audit and **familiarization** with the targetted facility, providing important information about the physical layout and characteristics of the plant, on-site and off-site facilities, permits and regulatory requirements, plant history, repetitive problems, regional setting and so on.

*help to develop an **understanding** of the **internal controls** of the facility - organizational structure, monitoring/reporting/notification procedures and responsibilities, authority.

*provide a **preliminary indication** of the adequacy, effectiveness and efficiency of the environmental compliance assurance system, identify deficiencies in the system and further information needs.

*serve as an important tool to **guide** and **streamline** the on-site investigation, identifying "problem/deficient" areas in need of detailed analysis, verification needs (inspection, observation and testing), and appropriate personnel to interview -- all of which ensures that on-site time and effort is spent more efficiently and effectively.

*upon completion, provide plant and line management with a comprehensive single document record of environmental affairs which can serve as a handy reference tool. Moreover, it forces plant management to become aware of environmental operations -- not in a fragmented issue-by-issue fashion, but as one overall activity. In addition to revealing the important and pervasive nature of environmental activities, it also helps to clarify and integrate the relationship of environmental affairs with other facility operations and concerns.

Most questionnaires use a variety of question styles, each useful in eliciting different types of information. These include yes/no questions, descriptive (narrative) questions, site specific and generic questions, and so on. Generally speaking, pre-audit questionnaires should attempt to remain 'fact oriented'; opinion/subjective type questions should be reserved for the on-site investigation.

Pre-audit questionnaires should be completed by site personnel with direct responsibility for environmental affairs and by those who are likely to benefit most from the audit, including the plant manager. The interval between questionnaire administration and on-site investigation will vary from firm to firm. Generally,

sufficient time should be allowed for audit team members to make fullest advantage of the information.

2.3.5 PRE-VISITATION MEETING

The environmental audit process may require that a meeting (perhaps several) be held with the targetted facility's management well in advance of to the on-site investigation, particularly during the design and "selling" stages of the environmental audit program. This meeting is used to introduce the iuea to the plant's management personnel, familiarizing them with the purpose, benefits and procedures of environmental auditing. Moreover, it is used to establish liaison, to select potential audit teams members, and to identify on a preliminary basis which plant personnel will participate. Input from the targetted facility's management can be used in the design of the audit program.

2.4 ON-SITE INVESTIGATION

On-site investigation, or "field work", is the heart of the environmental audit process. Field work is an umbrella term which describes all of the activities and efforts of the audit team to collect and document data and information. There are a variety of tools and techniques used in the field investigation. These include: questionnaires, checklists, interviews, physical inspection, observation, sampling and testing. Each yields different types of information and so most firms employ a combination. The precise extent to which each is used and the overall approach to conducting field investigations will vary

substantially from firm to firm. The on-site investigation normally consists of the **pre-audit meeting, the audit** and the **exit interview.**

2.4.1 FORMAL NOTIFICATION

Targetted facilities should be formally notified prior to the on-site activities. While some companies do conduct environmental audits on a surprise basis -- Johns-Manville, for example, has a "James Bond" inspection team that shows up at plants unannounced to do audits (Chemical Week, 1982:73) -- this is the exception to the rule. The function of an environmental audit should not be to "check-up on" and "wristslap" operating facilities. Rather, it is to assist plant management and line management to achieve corporate objectives and meet regulatory requirements. Plant management that feels it is being assisted and not inspected by corporate management is much more likely to be cooperative and open, volunteering and identifying information which is seen to be in its own best interest to know.

There are concerns that targetted facilities will perform 'house-cleaning' upon notification of the audit, thereby 'sweetening' the audit results. It is of course in plant management's best interest to gain an honest appraisal of its operations. However, even if "house cleaning" does occur it may have a wholly positive effect on the overall environmental performance of the facility and on the awareness of and concern for day-to-day environmental affairs.

The length of time between formal notification and on-site investigation varies from firm to firm. Olin Corporation for example, gives one to three days notice. (Environmental Audit Letter, Vol 1, No 1, 1983:7). In other firms, the length of notice ranges anywhere from several days to several months.

2.4.2 PRE-AUDIT MEETING

The first step of the on-site investigation is the pre-audit meeting between the audit team and appropriate personnel from the operating facility. At this meeting, the audit program and detailed schedule is reviewed, outlining what areas and facilities are to be audited, the types of information sought, and the ways such information is to be collected. Any special problems or concerns are discussed and questions from facility personnel are fielded. Facility personnel may suggest the most appropriate operating personnel to interview and the most efficient and effective ways to collect the desired information. The pre-audit meeting also provides the opportunity for team members and facility personnel to become familiar with one another, which may help to foster communication and cooperation.

2.4.3 AUDIT

A major purpose of the on-site audit is to verify findings and information previously provided by the plant records, reports, personnel, pre-audit questionnaire, and other sources. As such, it will verify the existence and operation of compliance assurance activities in conformance with appropriate procedures, the accuracy of submitted reports, and the adherence to specified reporting requirements. Particular attention should be paid to ambiguities and/or deficiencies identified by other pre-audit information sources. A second purpose is to gather new information: to identify and document any audit elements or deficiencies not covered by pre-audit information sources.

The characteristics of the on-site audit will vary from firm to firm, depending again on the objectives, scope and financial limitations of the overall audit program, the expertise of team members and on the type and extent of pre-audit preparation activities. The on-site audit consists of three general activities: inquiry, observation, and testing. Each yields different and valuable information. The cost and time of conducting an audit increases with the amount of observation and particularily testing, employed.

(i) Inquiry and Interviews

Inquiry refers to formal and informal interviews and discussions held with both operating and management personnel. Interviews should be conducted with a representative sample of all plant personnel. Each of line operators, technicians, laboratory scientists, maintenance personnel, and management personnel can be a

valuable source of information. And each reveals a different type of information. Questions should be appropriate to the interviewee. Subjective and opinion type answers can be encouraged, for while written and and recorded plans, policies and procedures describe the way things should be, people reveal the way they actually are.

Interviews are also valuable in identifying informal systems. Informal systems can have a profound influence -- positive and negative -- on the effectiveness and efficiency of the overall industrial or management system. Because they are not recorded in operating manuals or management policies they can usually only be identified through casual discussions and observation. Once identified, depending on whether they are beneficial or harmful to the plant operation, recommendations should be made for either formalization or cessation.

Interviews should occur privately, without supervisory personnel being present. The anonymity of the interviewee should be assured and observed. Above all, questions should be of a functional, not personal, nature. The interviewee should not be made to feel as though his/her personal abilities and proficiencies are being questioned. In addition to the obvious problem of enticing antagonism and reducing cooperation, personal questions can lead to conflicts with employee unions.

(ii) Inspection/Observation

Site inspection and visual observation is a important activity of the on-site audit. It too can make use of aids such as checklists, surveys, plot plans, cameras, and so on. The specific areas of review will depend on the scope of the audit and the

characteristics of the audited facility. In general, it will cover day-to-day activities, monitoring procedures, operating units, off-site facilities, filing systems, past records, training methods, recordkeeping, physical layout, general housekeeping, discharge points and other areas as the audit team sees fit.

(iii) Testing

The third general activity employed in the on-site audit is 'testing'. Testing takes two forms. First, it refers to the external sampling and laboratory analysis of emitted substances, effluents, or discharges in order to verify the accuracy of submitted reports and of the monitoring/sampling/testing devices and procedures. The use of empirical testing of emitted substances varies from firm to firm. Some don't do any, some test extensively. Testing can be time consuming and costly, and in some cases, may not be consistent with the purpose of the program. Second, testing also refers to tests of management systems and procedures. Are proper reports being submitted to appropriate personnel in a timely manner? Are appropriate personnel notified of excursions or emergencies? Do employees know what to do in the event of an emergency?

Pennsylvania Power and Light's on-site investigation includes the following:

*interviews with facility personnel

*photographs taken to document audit findings

*noise readings taken at fence line

*sampling techniques and analysis methods are observed to ensure that established procedures are followed

*monitoring equipment is checked to verify that it is inspected as required, and that maintenance and calibration records are up to date

*opacity readings taken at operating stocks

*pollution abatement equipment inspected to ensure that it is working properly

*environmental reports, chemical analysis sheets and strip-chart data are reviewed. (Basta, 1983)

2.4.4 EXIT INTERVIEW

At the conclusion of the on-site audit, an 'exit interview' is held with the plant manager and environmental staff. This meeting gives management preliminary feedback on the plant's performance and on the effectiveness of existing management and technical control systems. If necessary, such information can be acted upon immediately. It also gives the plant management the opportunity to comment on and help interpret the audit findings, to ensure their completeness and accuracy and to clarify any misunderstandings or ambiguities. This in turn helps the audit team in the preparation in a meaningful final audit report.

2.5 AUDIT REPORTING

Specific reporting procedures and requirements are key components in conducting an environmental audit. Audit results must be presented in a clear, meaningful and consistent fashion and they must be received by appropriate levels of management in a timely manner.

Audit reports vary considerably in their purpose, preparation, format, content, distribution and response, although the actual process of audit reporting is relatively consistent from program to program. A number of decisions are required throughout the process,

regarding not only what is to be reported, but also how, when and to whom. Each decision can have serious implications for the overall success and effectiveness of the environmental audit program. As A. D. Little's Center for Environmental Assurance state that audit reports present both risks and opportunities; the challenge is to accurately communicate findings so that they are understood and unncessary liabilities (confidentiality, 'smoking gun') are avoided (1983B:74).

2.5.1. REPORT PURPOSES

The prime purpose of the report is to communicate findings. While this information must be linked with the audit program's goals and objectives, it must also address the different information needs and functions of various levels of management throughout the corporate hierarchy. Top management will have different information needs than plant management; the report should satisfy both.

Another purpose of the report is to initiate corrective action. The audit report identifies and communicates those deficiencies to personnel with the authority to initiate or direct corrective actions. The precise role and responsibility of the audit team varies from firm to firm. In some, the audit team identifies deficiencies and problems and then develops and recommends specific corrective actions (in accordance with the team's technical and management expertise). In others, the audit report is only diagnostic; the development and implementation of corrective actions (action plans) is left to plant management. There is no single correct role and responsibility of the audit team, but

whatever they are, they must be clearly defined and communicated early in the audit process.

Finally, as a written account, the audit report provides documentary evidence of: 1) the environmental condition and compliance status of the facility, 2) having done an environmental audit and 3) "due diligence" in self-monitoring, identifying and responding to identified deficiencies. (A. D. Little, 1983B). The audit report becomes a handy reference tool that can be used repeatedly by management. It is also valuable as a starting point for subsequent audits of the facility. Moreover, proof of having done an audit and showing "due diligence" can be an important tool in demonstrating corporate and social responsibility, particularly during litigation.

The report, and the audit, must not be treated as a public relations document. This is not congruent with the purpose of an audit; it is an internal tool. Reports prepared as public relations documents will likely be of little value to corporate and plant management and may even cause audit results to be treated with suspicion and in the end create adverse publicity.

2.5.2 REPORT PREPARATION

There is strong consistency among private environmental auditing programs as to the process conducted in preparing audit reports. The key steps can be summarized as follows:

1. The audit team prepares a draft report of audit findings based on preparatory and on-site activities.

2. The draft report is circulated for review and comment to ensure continuity, accuracy and adequacy. Reviewers generally include audit team members, individuals directly involved in the audit (plant manager and environmental staff) and legal counsel (if not already directly involved), but not upper management.

3. Relevant comments and suggestions are incorporated and final report is prepared and distributed to appropriate constituencies.

4. Action plans are reviewed by the audit team and, where necessary, other appropriate personnel.

5. Follow up on action plans, in the form of 'progress reports' are often prepared until all identified deficiencies have been addressed (Basta, 1983:10-11; A. D. Little, 1982:2).

2.5.3 REPORT CONTENT

The content is the hub of the audit report. The ultimate value of the report, and hence the audit program, depends on what kind of information is communicated to whom. Information and data must be presented in a clear, concise, usable and understandable fashion. A. D. Little offers the following principles regarding the reporting of audit findings.

*Be wary of the corporate culture and management philosphy of the corporation -- is a written report necessary? (How is comparable non- environmental information reported?).

*Be explicit about actions required of addressees (that is follow up procedures).

*Provide sufficient background information.

*Stick to the facts; avoid speculation.

*Qualify statements.

*Avoid extreme language. (1983C:75).

The final result should be an "account" of the environmental assets and liabilities of the operating facility: it should identify and describe those areas in which the firm is in compliance and in which existing practices are adequate, as well as in areas of non-compliance or in which existing practices may be inadequate. Findings, are often divided into categories such as 'minor', major'; 'significant', 'critical'; 'corrective', 'non-corrective', or 'regulatory', 'non-regulatory', etc. An attempt should be made to determine the cause of non-compliance so that appropriate corrective actions can be designed. The report should also identify and describe previously unaddressed environmental compliance issues, potential problem areas in the future and other areas of concern that require corporate attention. (Ibid:113). The specific subject matter addressed by the report could include:

*purpose, objectives, scope, conduct and participants of the environmental audit.

*brief history of the plant; comments and follow up on previous audit.

*compliance with environmental regulations (all media audited) including requirements, findings, excursions and recommended actions.

*suitability of training programs

*preparedness for environmental emergency episodes

*overall environmental managment and control system, including effectiveness, efficiency and adequacy, recommended changes to facilities and systems, and potential for cost savings.

*general environmental housekeeping and observations

indicating good practices as well as items of concern.

2.5.4 REPORT FORMAT

There is no standard format for presenting audit findings. It will vary from firm to firm, depending on the scope of the audit, other reporting practices, and the writing style of the preparer. Whatever format is adopted, subsequent audit reports should be written in a consistent fashion. Appendix 1 gives an example of an environmental audit report.

2.5.5 REPORT DISTRIBUTION

The distribution of the final audit report will varies. Invariably, the plant manager receives a copy, and at his discretion, it may be distributed to other appropriate line managers. A survey conducted by A.D. Little revealed that almost 70% of companies surveyed submit the audit report to top level management, including President, Chief Executive Officer, or Vice-President(s); 54% submit a copy to the legal department (1982A:76). Hercules Corporation, on the other hand, only distributes the report to top management if "we feel there are items of substantial significance." (Douglas Kellman, Hercules corporation, in Environmental Audit Letter, Vol. 1, No. 8, 1983:3). Other receipients of the report may include regional managers, environmental staff (at the corporate and plant level), plant level engineering and manufacturing staff and audit team members. As a rule of thumb, the audit report should only be distributed to those with a need or use for the information

contained in it -- it should not be released as a general document. Among other things, this helps to maintain a confidentiality mentality and helps to ensure that it doesn't fall into the wrong hands.

2.6 FOLLOW-UP AND FEEDBACK

Preparation and distribution of the audit report is not and should not be the final step in the auditing process. "If you are going to create a paper trail, make sure it leads somewhere -- to a final memo showing all identified problem have been fixed." (Wilkenfeld, 1982:3). The audit program must include mechanisms which provide for the post-audit design, review, implementation and evaluation of corrective measures for identified deficiencies. This is so for several reasons.

It is the logical and responsible thing for a corporation to do. A corporation which implements an environmental auditing program is demonstrating its desire to be environmentally and socially responsible; deliberate failure to address identified problems and deficiencies is inconsistent with that desire and may even work at cross-purposes with it.

It is the legally responsible and correct thing to do. Penalties associated with knowing non-compliance are more severe than those with unwitting non-compliance. Moreover, failing to respond to or address an identified problems could constitute negligence and expose the corporation to substantial liability if such a problem were to become a public or environmental health hazard.

Unless corrective measures are implemented, and unless such measures are effective, there will be no (or little) benefits to the environment and/or human health. This will also have implications for regulatory schemes involving environmental auditing inasmuch as they are based and supported on this fact.

The scope, function, type and degree of formalization of post-audit follow up and feedback mechanisms vary from firm to firm. In some, only limited, informal follow up procedures are in place, stemming partially from the desire of corporate management not to assume a "policing" role; responsibility for environmental matters is at the plant level and so too should be the responsibility for follow up and post-audit feedback. In others, formal, rigid and comprehensive follow up procedures are established and executed at the corporate level. As a rule, follow up procedures should be formalized and the role and expectations of appropriate constituencies established early in the audit program.

In general, follow up and feedback procedures should provide for:

*the **design** and development of corrective measures, both technical and administrative. This is usually left to plant management, but is often based on recommendations of the audit team.

*the **review** of proposed action plans (corrective measures) by audit team and other personnel where appropriate. Such review may or may not result in the modification of action plans.

*the prompt **implementation** or execution of action plans (where deemed appropriate). Again, while this is often left to plant management, some audit programs call for the periodic submission by plant management to corporate management of "progress reports" which document the proposed and completed implementation of corrective actions. Often, such progress reports must be submitted until all identified deficiencies are addressed.

*the monitoring and **evaluation** of implemented corrective actions to determine their adequacy and effectiveness in achieving desired outcomes. If implemented measures prove to be inadequate or ineffective, the cycle of design, review, implementation and evaluation should be repeated;

*the **communication** of significant findings by corporate management to ensure that similar discrepancies are avoided elsewhere in the company. Problems likely to affect other operating facilities, as well as possible solutions, should be made known to them.

2.6.1 POST-AUDIT ASSESSMENT

Another type of follow up concerns the need to assess and "size up" the overall effectiveness of the audit program -- to "audit the audit", so to speak. The audit evaluation should be conducted by personnel detached from the design and conduct of the program, or at the very least, should include the opinions of a variety of involved personnel (audit team, plant and corporate management, legal) to enhance objectivity. The evaluation should occur after sufficient time has elapsed that the effects of the program are measurable -- this must be determined on a case-by-case basis.

In evaluating the audit, several questions might be addressed, including:

*Did the audit meet its intended purpose? Were objectives realistic, achievable, clearly defined and understood by all parties?

*Did goals match management's needs and corporate values and support the environmental management approach?

*Did the audit team receive necessary cooperation from on-site personnel?

*Was the audit team properly staffed and meet the needs for reliability, credibility, continuity, and objectivity?

*Were audit team members adequately trained and experienced?

*Were there any procedures or practices that require

modification? Which ones did not help to achieve stated goals?

*Were instructions and procedures explicity and was enough evidence/proof gathered to substantiate findings?

*Were information gathering mechanisms appropriate and useful?

*Were specific formal reporting relationships between the audit program and various levels of management established?

*Are audit reports timely and concise and do they clearly and appropriately disclose audit findings? (Truitt, et al, 1981:120-123; A. D. Little, 1983A).

Following each audit, Pennsylvania Power and Light Co. sends a questionnaire to audited facility to determine their opinion of the audit and the competence and professionalism of the auditors. This allows changes to be made in the program, if necessary, to make it more effective. The results are reviewed, tabulated and forwarded to the Executive Vice-President of Operations. (Basta, 1983:11).

Finally, as A. D. Little observes, the real test is the results. A good audit will result in an accurate description of environmental status and concerns, timely corrective actions, avoidance of surprises, management recognition of audit program value, management assurance, management confidence and support (1983A:15).

3.0 ADVANTAGES AND DISADVANTAGES OF ENVIRONMENTAL AUDITING

> Few can be induced to labour exclusively for posterity; and none will do it enthusiastically. Posterity has done nothing for us; and theorize on it as we may, practically we shall do very little for it unless we are made to think we are at the same time doing something for ourselves. (Abraham Lincoln)

Environmental auditing appears present to a rare convergence of private and public interests, providing potential benefits not only to private industry but also to the environment, the public at large, and regulatory authorities.

As a means of reviewing existing management and operating systems, environmental auditing increases the certainty, effectiveness and efficiency by which a firm manages its environmental affairs.

Environmental auditing benefits the environment by giving private firms the tools to check compliance with regulatory requirements, to assess and improve their environmental performance, and to identify and reduce environmental risks and hazards.

It benefits the government by providing more and better environmental protection for the same public dollar, while at the same time enabling a reallocation of public resources to focus on the more serious environmental problems.

There are potential disadvantages associated with the use of environmental auditing. For private firms, an audit has the potential to identify problems and risks that might otherwise have been discovered or detected by regulatory authorities. More important, there is the potential that proprietary or sensitive information generated during the audit will be involuntarily or

inadvertently disclosed to third parties. And of course there are the financial and human costs of conducting auditing programs.

From an environmental protection standpoint, there are potential downside risks associated with environmental auditing. The possibility, however remote, that a firm will manipulate auditing results to make itself look like a better environmental actor than it really is, must be considered. Similarly, what of the firm that, by conducting an audit, discovers it is doing more than necessary to meet its environmental obligations and as a result, reduces its efforts aimed at environmental protection?

The extent to which auditing benefits will be realized depends largely on the quantity and quality of private sector environmental audit programs. Factors which effect quality were discussed in Chapter 2. Unless a firm implements an environmental auditing program however, any discussion of quality can only be of "academic" interest. For this reason, it is important to identify the possible motivations or reasons behind the decision of a firm to conduct an audit program.

This chapter will outline the principle benefits of environmental auditing to private sector firms, followed by a discussion of benefits to the environment, the public at large, and regulatory authorities. The chapter will conclude with an examination of some of the disadvantages of environmental auditing and some of the factors that may act as barriers to a more widespread application of it.

3.1 BENEFITS TO PRIVATE FIRMS

> ..a sound information based developed through an environmental audit program will result in a better run business, more accurate financial planning, higher employee morale, better corporate decision making and will minimize the frequency of embarrassing circumstances which accompany the failure of management to know whether the corporation is in compliance with environmental laws. (Truitt, et al, 1981:iii).

In the general sense, a benefit refers to anything that contributes to an improvement in condition. (Webster's New Twentieth Century Dictionary, 1975). Inasmuch as corporate objectives are designed to lead to an 'improvement in condition' (by enhancing long-term profits and competitive viability), in this paper, 'benefits' can be defined to include ... "those aspects and outputs of voluntary private-sector environmental auditing that significantly and positively contribute to the achievement of corporate objectives." (A. D. Little, 1983D:1). The benefits of environmental auditing to private firms are many and varied. They are largely a function of the purpose and objectives of the program, as well as of the types of information collected in pursuit of those objectives. Benefits can be measured directly or indirectly. Some are quantifiable, others are not. Moreover, they are received by various constituencies throughout the corporation.

A. D. Little's Center for Environmental Assurance identifies two principle categories of environmental auditing program benefits: **Increased environmental management effectiveness** and a feeling of **increased management comfort** or security. (1983D:1). Table 3.1A gives examples of which types of program effects fall into which benefit category.

TABLE 31.A

EXAMPLE PERFORMANCE MEASURES
OF AUDIT PROGRAM EFFECTS

Directly Influenced by Audit Program	Generally Quantifiable	Generally Not Quantifiable
Improved compliance record	√	
Reduced legal actions brought against company and/or individuals	√	
Reduced fines	√	
Improved incident/accident statistics	√	
Reduced volume of environmental hazards	√	
Improved worker health	√	
Improved reputation		√
Favorable publicity		√
Improved regulatory relations		√
Indirectly Influenced by Audit Program		
Decrease in business interruptions by identifying problems that could affect production	√	
Increased worker productivity from reduced environmental risks	√	
Reduced insurance rate	√	
Increased involvement in day-to-day environmental activities		√
Increased job satisfaction		√
Knowledge of job performance measures		√
Feeling supported by management		√

SOURCE: A. D. Little, 1983D.

By and large, the "psychic" benefits associated with increased comfort are non-quantifiable, whereas the benefits of increased management effectiveness are quantifiable. Table 3.1B provides examples of indicators which might be used to measure the effects of environmental auditing programs, classifying them as either quantifiable or non-quantifiable.

Benefits can be felt by various constituencies within the corporation (see Table 3.1C). Possible benefactors include stockholders, Board of Directors, Chief Executive Officer(s), other corporate officers, corporate (administrative) environmental management personnel, other corporate departments (such as legal, industrial hygiene), plant manager, plant environmental staff and wage workers. Benefits are not necessarily restricted to any one constituency: The same benefit can be felt by a number of constituencies throughout the hierarchy, particularly those benefits of a non-quantifiable nature. Certain constituencies will of course benefit from the program more than others. Plant managers benefit in a great many ways whereas wage workers will likely only feel benefits inasmuch as the audit program improves their working conditions and reduces their exposure to risk.

Table 3.1D presents the principle effects of an audit program and the information it generates that are considered to be beneficial to the implementing firm. Note that it is highly unlikely that any individual audit program will produce all of the benefits identified. Also note that indirect benefits have not been included, although they will likely contribute substantially to the overall effect of the audit program and in some way benefit the

TABLE 3.1B

CLASSIFICATION OF AUDIT PROGRAM EFFECTS

Principal Categories of Benefits / Audit Program Effects	Increased Environmental Management Effectiveness	Feeling of Increased Comfort
Identification and documentation of compliance status	●	●
Improvement in overall environmental performance at the operating facilities	●	●
Assistance to facility management	●	●
An increase in the overall level of environmental awareness	●	●
Acceleration of the overall development of environmental management and control systems	●	●
Improvement of the environmental risk management system	●	●
Corporate protection from potential liabilities		●
Development of a basis for optimizing resources	●	

● Primary

● Secondary

SOURCE: A. D. Little, 1983D.

TABLE 3.1C

CONSTITUENCIES IN THE CORPORATION AFFECTED
BY AN AUDIT PROGRAM

Measures \ Parties Affected	Stockholders	Board	Corporate Officers	Corporate Environmental Management	Legal	Manufacturing Manager	Plant Manager	Plant Environmental Staff	Line Supervisors	Hourly Workers
Quantifiable										
Improved compliance record		S	S	X	X	S	X	X	S	
Reduced number of legal actions	X	X	X	X	X	S	X			
Reduced fines			S	X	X	S	X	X		
Improved incident/accident statistics		S	S	X	S	S	X	X		
Reduced volume of environmental hazards				S		X	X	X	X	X
Improved worker health							X	X	X	X
Not Quantifiable										
Improved reputation	X	X	X	X	X	X	X	X	X	X
Favorable publicity	X	X	X	X	S	X	X	X	X	X
Improved regulatory relationships			S	X	X		X	X		

X = Generally applicable
S = Situational
□ = Generally not applicable

SOURCE: A. D. Little, 1983D.

TABLE 3.3 BENEFITS OF ENVIRONMENTAL AUDITING TO PRIVATE FIRMS

*Determine and verification of environmental compliance status.

*Giving top management confidence that adequate procedures for managing environmental risks and assuring daily compliance are operating effectively.

*Avoidance and/or reduction in fines and penalties resulting from violations.

*Generation of information necessary for U.S. Securities and Exchange Commission disclosure requirements and useful for mergers, acquisitions and expansion planning.

*Identification of environmental risks/problem areas and the early warning and prevention of environmental surprises, (risk identification, assessment and management).

*Improved communication between corporate management and operating facilities, and within corporate and facility management and staff.

*Improved financial planning through the identification of actual, future and potential capital, operating and maintenance costs associated with environmental activities.

*Providing for a more efficient allocation of resources by modifying operating practices and administrative procedures.

*Identification of potential cost-savings (such as opportunities to reuse, recover or recycle materials).

*Reduction and containment of problems that can adversely affect otherwise normal business operations.

*Better preparation for emergency and crisis situations.

*Enhancing regulations and credibility with environmental regulatory authorities.

*Improved corporate image and positive public relations.

*Enhancement of environmental awareness and responsibility throughout corporate hierarchy.

*Protection of corporation and officers from civil and criminal liabilities and better preparation in the event of enforcement activities.

*Improvement in environmental performance (better compliance, fewer problems).

(Truitt, et al, 1981:8-25; McIntyre, 1983:912-3; A. D. Little, 1983D; Blumenfeld, 1982).

the corporation. (Possible indirect effects are identified in Table 3.1A).

Environmental auditing appears to make good business sense. It helps to identify potential cost savings and provide for more accurate financial planning, to assure corporate and line management that operating facilities are in compliance with legal and company requirements, to avoid liability, and to improve corporate image. And, it helps private corporations to shape their own environmental future. (Penna, 1983:16).

3.2 BENEFITS TO THE ENVIRONMENT AND GENERAL PUBLIC

In section 3.1, a benefit referred to anything which contributed to an improvement in condition (of the corporation). A benefit to the environment* refers to anything that, as a result of an environmental auditing program, contributes to an improvement in the condition of the environment (that is, in environmental quality). Because of the direct relationship between the quality of the environment and the health, welfare and survival of man, anything that benefits the environment (that is, increases its quality or, inversly, reduces adverse impacts on it) also benefits the general public.

---

*Environment here is defined as the "natural" (as opposed to man-made or cultural) environment, and includes biological and physical components and resources.

Environmental auditing will benefit the environment and public to the extent that it results in an improvement in the adequacy, efficiency and effectiveness of a company's existing environmental protection activities and controls. Benefits to the environment and public are not the result of having done the environment audit, as such, but of the follow up actions and activities taken as a result of the information produced (or of the continuation of actions already positive). Such actions could include:

> *A reduction in the total number, severity and frequency of non-compliance incidents (excursions beyond applicable standards).
>
> *An improvement in the effectiveness and/or efficiency of pollution control equipment and facilities as well as other related production facilities. (Leads to reduction in total emissions).
>
> *The identification and management of environmental risks and hazards and the detection and prevention of environmental surprises and sudden events.
>
> *Better preparation, anticipation and response to actual emergency and crisis situations.

As Clark observes,

> Environmental auditing programs will provide environmental benefits to the extent that they result in the elimination of environmental and public health problems that otherwise would have existed. (1983:7).

The process of managing, controlling or reducing environmental problems* can be said to consist of three major steps. The first is the **identification** of the problem, whether it be an incident of non -compliance, an inefficient, faulty or ineffective piece of

---

*Problems is interpreted to include both those of a day-to-day nature as well as those of an issue-by-issue or emergency nature.

equipment, or a particular environmental risk. Once the problem has been identified, there must be a **response**. Alternative strategies or measures to manage, control or correct the problem must be developed, evaluated, selected and implemented. Finally, there must be assurance, that is, **feedback** and review that control measures implemented are appropriate, acceptable and effective.

Clark observes that environmental auditing can benefit the environment to the extent that it increases the probability of each of these steps and its activities being successful. The central question, says Clark is: "to what extent will the environmental auditing program affect the probability of success at each of the identification, response, and feedback steps? (1983:7).

An environmental audit can increase the probability of success in **identifying** problems and hazards inasmuch as it improves the ability of the compliance assurance system to identify problems and hazards. To do this, it must:

> 1) increase the range of problems being monitored for; recognizing that there is often a direct relationship between the number of parameters being monitored for (specific pollutants, emission/discharge points) and the potential for identifying problems;
>
> 2) improve the depth and breadth of the compliance assurance system, that is, increasing the number of facilities and kinds of activities covered;
>
> 3) improve the quality of technical judgements made in the audit, (problem identification being dependent in part on the technical competence of environmental staff. (Clark, 1983:9).

It is possible, that the environmental audit itself, through an inspection of past records, operating practices and facilities, physical observation and basic inquiry, may uncover certain trends, "weak spots" and other potential hazards previously left undetected by the compliance assurance system. Clearly, an increased ability to identify problems will be a function of both the audit exercise itself and of the follow up actions, activities and changes to the compliance assurance system that evolve from it.

Environmental audits can also increase the probability of success in **responding** to identified problems and deficiencies, both directly and indirectly. As discussed earlier, an important feature of an environmental audit should be the commitment by top management (at least in spirit) to design and implement strategies and measures to correct identified problems. In addition to legal responsibilities, good management practices dictate that if a problem is identified, steps should be taken to control it. Such responses can be both technical ("hard") and/or administrative ("soft") in nature. Within each of these, the firm has the option of several means to achieve given ends.

Technical controls can be of many types, and might include the installation of new pollution control devices, the repair of faulty equipment of facilities, a change in testing protocols, a modification to production processes, and so on. The 'package' of control measures that a firm designs is often referred to as an 'action plan'.

An environmental audit can also increase either the probability that appropriate action will be taken or the speed with which such action is taken. (Clark, 1983:10). The environmental audit can help to improve the firm's reporting and response system, and to ensure that the audit results are distributed to the proper people (with sufficient authority to direct corrective actions) in a timely manner.

An indirect, albeit important, influence stems from the 'demonstration effect' of the audit's reporting system and from the auditing program's oversight responsibilities. Anxious to avoid being surprised by the results of periodic environmental audits, corporate officials may take steps to improve the reporting and response system outside of the auditing program. Indirectly then, the environmental auditing program may stimulate an improvement in the ongoing reporting and the speed of a firm's response to any problems that are identified in its ongoing environmental compliance assurance system. (Clark, 1983:11).

Environmental auditing can also increase the probability that control measures are effective and appropriate. The environmental auditing process is characterized by follow up, which should include not only the design and implementation of action plans, but also a **feedback** and review mechanism to assess and verify the effectiveness of a given measure in achieving its purpose. If control measures, of either a technical or administrative nature, are discovered to be ineffective or inappropriate, they can be modified or changed to reflect this new information. Feedback mechanisms should be comprehensive and thorough enough to ensure

that control measures designed to solve problems occuring in one medium do not create or transfer problems to another.

Environmental auditing then, can lead to the reduction or elemination of the adverse environmental effects of a company's operations. It can accomplish this by increasing the number and type of hazards/problems identified by compliance assurance activities, by increasing the certainty and speed by which corrective measures will be designed and implemented, and lastly, by providing a mechanism by which the effectiveness and appropriateness of implemented control measures can be evaluated.

The exact extent to which environmental and public benefits will be realized is dependent on a number of factors. The first is the quality and effectiveness of the environmental auditing programs of individual firms, and the level of commitment with which firms approach the exercise. The second is the total number of individuals firms who implement such programs; there should be a direct relationship between total number of firms and the total magnitude of environmental benefits. Thirdly, it is important that environmental auditing programs -- more specifically the design of action plans -- focus on the more serious environmental problems.

> Any program which resulted in resources being focussed on less serious problems could result in a <u>reduction</u> in environmental benefits (even though this focussing increased the probability that these less serious problems would be identified and that action would be taken to correct them. (Clark, 1983:14).

The extent to which benefits are felt by the environment and public is also shaped by the actions that public agencies take in response to such programs. The types of programs that firms adopt are likely to be strongly influenced by government policy decisions.

3.3 BENEFITS TO GOVERNMENT AGENCIES

Government agencies responsible for managing environmental activities and ensuring long-term environmental quality can benefit from environmental auditing. Recognizing this, government agencies in the United States, at both the federal and state level, have expressed considerable interest in the environmental auditing concept. They have explored various government responses and intiatives which seek to maximize benefits to both the private and public sector. These various initiatives, particularly those of the U.S. E.P.A. will be discussed in more detail in Chapter 4, as will the motivations, implications and benefits of public sector involvement. Presented below is a brief outline of the potential benefits of private sector environmental auditing to the public sector and government agencies.

Many potential benefits to government agencies are dependent on specific government auditing programs and more important, on industry participation and cooperation in these programs. These benefits include increased certainty of industry actions, more effective compliance oversight, a more efficient allocation of resources, and a more balanced enforcement policy. Such benefits will only be realized nowever, if there is a mechanism which provides government agencies with a review of specific auditing

program details, findings and corrective actions. In practice, many firms may be reluctant to release such information to government agencies, for the fear that such information could be used against them.

The U.S. E.P.A. believes that environmental auditing (and associated compliance assurance systems) provides an opportunity for developing compliance regulatory reform leading to more effective oversight.

> Simple logic dictates that as the private sector assumes greater responsibility for ensuring compliance with environmental regulations, the public sector role could diminish. (Palmisano, 1983:11).

An increased private sector responsibility would have several implications. First, it could result in better overall compliance with environmental regulations. Firms can pay attention to day-to-day compliance in ways that exceed what the government can do with its limited resources. (Blumenfeld, 1982:4). These agencies can't carry out all the desirable oversight and enforcement activities; they don't have the funds necessary to regularly inspect and monitor company facilities and ensure on-going compliance. Moreover, private firms are in a position to render a more accurate, detailed and meaningful measure of compliance. They are more familiar with facility operations, history, and nuances and have greater access to past records.

Assuming that private sector environmental auditing programs (and the information they produce) met with the acceptance of regulatory agencies, private sector environmental auditing could allow for a more efficient allocation of public resources.

Specifically, oversight and enforcement activities could be shifted away from firms with auditing programs and good compliance records to those without such programs, with poor compliance records, or with potential environmental and health problems. In other words, government agencies could focus resources where they are needed most. This would increase both the efficiency and effectiveness with which these agencies address environmental (and public health) problems.

Finally, environmental auditing programs could lead to a more balanced and fairly applied enforcement policy. It would enable government agencies to affirmatively acknowledge good compliance behaviour as well as to impose sanctions for poor compliance performance. (Blumenfeld, 1982:5). Each firm would be treated according to the level of corporate and social responsibility and environmental performance it exhibits.

3.4 DISADVANTAGES OF ENVIRONMENTAL AUDITING

> Looking at the benefits and liabilities of EA programs helps to identify some key issues and incentives which affect the use of this concept on a more widespread basis. The benefits serve to substantiate the desirability of such programs. The liabilities are the restraining factors which help to show why the use of EA is not more widespread. (McIntyre, 1983).

The purpose of this section is to identify and discuss the key liabilities of environmental auditing, of which cost and confidentiality are two prominent examples. Before this however, discussion will focus on some of the more general factors that serve or have served to limit a more widespread application of environmental auditing. These include the 'newness' of the concept,

the lack of accepted principles and methods, the potential for government intervention, and the compatibility with corporate management philosophy.

3.4.1 INFANCY

(i) Unfamiliarity - Diffusion of New Ideas

Unfamiliarity with the environmental auditing concept is the most obvious and limiting factor; until a firm becomes aware of environmental auditing, there is no reason to expect it to develop a program on its own.

Figure 3.4.1 depicts a well-studied theoretical life-cycle curve which can be helpful in explaining the diffusion of new ideas or products. Characterized by an S-shaped curve, this life-cycle consists of three distinct stages: 1) Initially, the idea or product experiences slow growth and limited experimentation; most people prefer to observe the acceptance and use of the idea or product by other people. 2) The idea or product experiences rapid spread and exponential growth, as second generation adopters recognize the value and utility of the idea or product (based on the perceived experiences of first generation adopters). 3) Growth and spread of the idea or product eventually levels off and stabilizes. (Palmisano, 1983C:6).

FIGURE 3.4.1 A GENERAL DIFFUSION MODEL

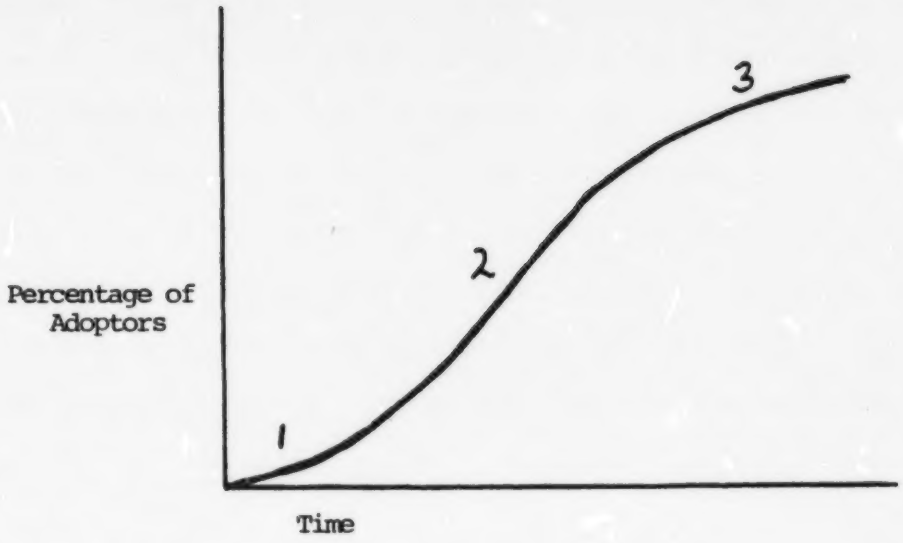
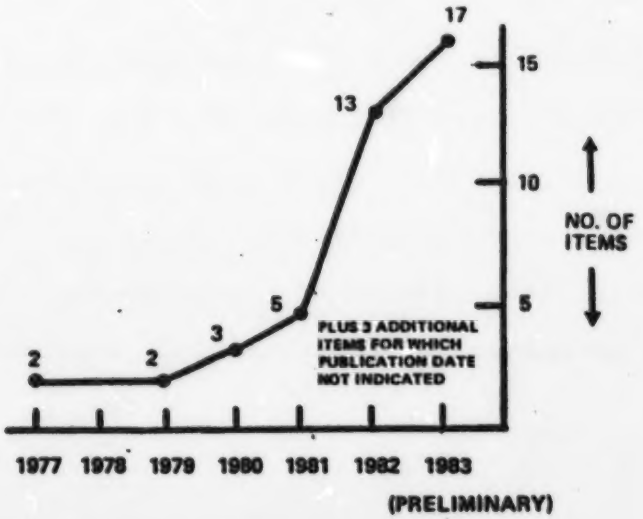


FIGURE 3.4.2 ENVIRONMENTAL AUDITING ARTICLES' PAPERS AND COMMENTARIES PUBLISHED



The actual rate of diffusion of any one idea product is influenced by a number of factors, including the type and characteristics of the idea itself and the organizational and decision-making conditions of potential adopters/buyers. The diffusion of the environmental auditing concept is evidently still in the first stage. While progress up the curve isn't inevitable, it is reasonable to expect that exposure to the concept and observation of first generation experiences will lead to an increased awareness and familiarity of the concept in the near future. Whether diffusion will lead to adoption is an entirely separate question; but it is a prerequisite. Figure 3.4.2 demonstrates that the number of published articles, papers, and commentaries on environmental auditing has experienced a steady increase since 1977.

(ii) Misunderstanding

The process of diffusion may itself foster certain barriers to the acceptance and application of environmental auditing. The transfer of inaccurate or incomplete information can lead to a misunderstanding of the auditing management concept among potential users. An informal survey conducted by the University of North Carolina's Institute for Environmental Studies, for example, revealed that environmental auditing was perceived by some companies as nothing more than glorified environmental monitoring, and as leading to the generation of redundant and unproductive paperwork. (1983B:16)

This is somewhat linked to the problem discussed earlier created by the use of the word 'auditing'. For some people, the word 'auditing' implies an activity with little or no resemblance to what is referred to here as 'environmental auditing'. Two separate scenarios may be created by a misunderstanding of the intended concept, both of which raise false expectations and may lead to eventual disappointment. Firm A may accept and implement the environmental auditing activity, only to discover that neither the experience nor the results are what was expected. Firm B, on the other hand, may initially reject the idea only to discover later, based on the observation of other firm's experiences, that it would have been appropriate and effective in the first place. In the context of environmental auditing, the barrier of misunderstanding is complicated further by the lack of consensus of what constitutes environmental auditing. What may be a 'misunderstanding' to one, may be a 'perfect understanding' to another.

(iii) Lack of Accepted Principles for Application in Practice

There are no generally accepted environmental auditing principles, and conventions based on state-of-the-art practice are not yet widely accepted or even widely available. (A. D. Little, 1983:B). The "How to" of environmental auditing is The most important feature and yet, little documentation exists. The newcomer is faced with designing and implementing a program based in part on fragments of information derived from various sources. Often, environmental management conventions must be intuitively

deduced by company personnel. (A. D. Little, 1983:B).

(iv) Transferability

A serious, and as yet largely unaddressed barrier to the more widespread application of environmental auditing, is the lack

of transferability between large corporations and small companies. To date, environmental auditing has been undertaken almost exclusively by large corporations with several operating facilities -- chemical companies, petroleum companies, electric utilities, and the like. Most written accounts and articles are based on experiences with environmental auditing programs designed and executed from the corporate, as opposed to plant, level. Quite simply, most information exchange is occuring, by, for, and within large corporate entities.

Small companies have unique concerns, needs and limitations which are not adquately or appropriately addressed by scaled-down and transplanted large corporate auditing programs. For example, small companies are often less structured, have fewer environmental staff (often only part-time), have fewer resources and smaller environmental budgets, have less internal expertise and have smaller plants. Yet they have much to benefit from environmental auditing. Moreover, the adoption of environmental auditing by small companies would produce sizable benefits to governments and the environmental alike.

3.4.2 GOVERNMENT INTERVENTION

Earlier it was stated that government policy decisions and actions have a strong influence on the type and shape of environmental auditing programs adopted by private sector firms. In fact, government policies and actions -- both proposed and actual -- can serve as strong barriers to the widespread application of environmental auditing. The U.S. E.P.A.'s proposed voluntary incentive based approach to regulatory reform for example, drew mixed response from U.S. industry. Some of the major concerns were: that the approach was "stalking horse" for mandatory regulation, (i.e. that voluntary programs would eventually become mandatory), that it would unduly interfere with management styles and structures, that confidentiality would be jeopardized, and that there was insufficient incentives for voluntary participation. (Blumenfeld, 1982:7).

> Industry has been almost unanimously opposed to agency involvement for two basic reasons: those who do have environmental auditing programs don't want to be compelled to alter (through the meeting of agency minimum acceptable requirements) an otherwise perfectly useful tool and those who do not have environmental auditing programs don't want to be roped into something they didn't want in the first place. (McIntyre, 1983:12).

Aside from the economic implications, some are simply opposed to government regulation and intervention as a rule. This is especially so in the wake of a U.S. government administration that was elected in part on an agenda of regulatory reform, determined to find reasonable and responsible alternatives to the current 'command and control' approach to government regulation. (Cannon, 1982:4).

3.4.3 MANAGEMENT PHILOSOPHY

The environmental management philosophy of a firm may itself be a barrier to the adoption of environmental auditing programs. Those firms in the problem solving mode for example, may not feel the need for a system of evaluating and improving internal management and control systems; meeting minimum requirements and staying out of trouble may be enough. Indeed, for these firms a management tool which has the potential for uncovering deficiencies in the system and revealing new environmental problems may be undesirable.

The Institute of Environmental Studies at the University of North Carolina (1983B) identified two other management philosophy related-barriers to the wider employment of auditing. The first is the desire of certain firms with highly developed internal auditing programs to maintain a low profile. Some companies reported having been "burned" in publicizing environmental activities in the past, while others were concerned with too much publicity in general. The second concerned an uncertainty of environmental managers over corporate environmental policy. Specifically, certain environmental managers where unsure how the concept of environmental auditing would be received by upper management and were thus hesitant to try to implement such innovative approaches until they are tested and proven elsewhere. (Institute for Environmental Studies, 1983B:16).

3.4.4 COST

A liability of environmental auditing for some firms may be the cost of implementing such programs. Those firms that have established environmental auditing programs evidently feel that the benefits associated with the programs are well worth the costs. Otherwise it is unlikely such programs would have been implemented in the first place, or, as the case may be, have been continued. On the other hand, the absence of programs at other firms could indicate that some firms feel the benefits do not justify the costs.

The costs of environmental auditing programs are generally not a major decision criterion for large, multi-million dollar, multi-facility corporations. However, for medium and especially small-sized corporations who operate under greater financial restrictions, cost may be an important decision-making factor. That, as well as the availability of time and human resources.

Where cost is not decision factor regarding implementation, as such, it will likely have a strong bearing on certain design and conduct issues, including objectives, scope, staffing, scheduling and techniques. In this respect, whether the audit reviews all media, outputs and substances, or just selected ones, whether in-house or outside personnel are used, whether all facilities are reviewed and how often, or whether verification tests are used, will be influenced by the associated costs of each option and the financial resources that a firm possesses.

3.4.5 CONFIDENTIALITY

A major liability of environmental auditing identified by industries, legal consultants, and other constituencies is the potential release of confidential proprietary business information.* Like all internal investigations, environmental audits have the potential to identify 'sensitive' business information. Once identified, such information could be inadvertently or involuntarily disclosed and prove to be either embarrassing or damaging to the company.

Renz observes that the release of potential confidential information is controllable to the extent that one understands the nature of the information, the means by which it can be made public and the means by which it can be safeguarded. (1983:2).

(i) Nature of Information

In many respects, all private business information is sensitive, but it is not feasible or even possible to prevent disclosure of all sensitive information. Rather, only information which, if disclosed, would adversely affect the firm in some way, should be safeguarded. The most sensitive types of information in this regard relate to operations and marketing. Environmental audits might include both types.

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*So far, it appears as though the "confidentiality issue" is not a significant concern in Canada. There are of course normal concerns over protecting proprietary information, but not to the extent of invoking legal safeguards such as solicitor-client privilege.

Operations information includes process flows, material handling, inputs and outputs, types and efficiencies of production facilities, waste streams, formulation and the like. Marketing information refers to financial information, production capacity and rates, age of facilities and formulation. The disclosure of either type of this information could have an adverse impact on the market position of the firm. Competitors could use operations information to improve their own product, decrease production costs, or asssess their own operations. Marketing information could be used to make strategic marketing decisions based on, for instance, knowledge of the firm's financial position and ability to capture and maintain market, share. (Henz, 1983:2).

Reports of incidents of non-compliance, as well as other environment- related deficiencies, are also considered by many to be sensitive information. Public disclosure of such reports may open the corporation up to fines and penalties and even worse, criminal and civil liability enforcement proceedings. (Truitt, et al, 1981:27; McIntyre, 1983:12). If a problem is identified but no corrective action is taken, unwitting non-compliance becomes knowing non-compliance, which is even worse. Attempting to safeguard such findings may not be worthwhile, as statutes give regulatory agencies the mandate and authority to examine emissions/discharges and associated records. (Henz, 1983:2).

There are two recognized exceptions to discovery rules of U.S. law, the 'attorney-client privilege' and the 'work product immunity doctrine'. (Discussed below) Without them, there is virtually no way to avoid disclosure of information. These exceptions are not readily available, the procedures necessary to invoke them are costly and burdensome, and what is more, their applicability to environmental audits have not yet been tested in actual litigation. (Henz, 1983:6; McIntyre, 1983:12).

(A) Attorney-Client Privilege

The attorney-client privilege protects the confidentiality of communications between a client and legal counsel that take place in order to obtain or provide legal advice. Though perhaps more commonly associated with the individual, the application of this privilege in the corporate setting has long been recognized. To obtain the protection of information provided by this privilege, four conditions must be met. These are:

1) The 'threshold' requirement for the attorney-client privilege is that **counsel be used to provide legal advice.** The critical factor is that the advice and function be consistent with the conventional legal role of representation and counselling. Moreover, it must be evident that the audit is legal work, and that it reflects the unique professional expertise of lawyers.

2) There must be a **communication between a client and his attorney.** 'Communications" include those between legal counsel and senior-, middle-, and lower-level employees consulted during the conduct or preparation of the audit.

3) All **communications must be kept and treated as confidential.** If either the manner in which the communication was made or its subsequent treatment indicates disregard for its confidentiality, the privilege may be waived. Great care must be taken in two particular areas: the dissemination of client-attorney communications throughout the corporation (only to those

When conducting an environmental audit, avoid compiling records and never document more information than is absolutely necessary. This does not mean to be skimpy on the collection of data and evidence. Indeed, there must be a balance between sufficient and necessary information. But it does mean that if a certain bit of information can be documented and expressed without revealing proprietary details, then that way should be adopted.

A 'confidentiality mentality' is best maintained where a formal system for maintaining confidentiality exists. Characteristics of such a system include: all parties involved in the audit, including outside consultants, sign nondisclosure agreements, preferably drafted specifically for the environmental audit; audit procedures should be clearly established, written down and widely distributed; the role and responsibilities of each participating individual should be determined; and a formal filing system for field notes, lab results and final report should be established. (Henz, 1983:6).

Maintaining a confidentiality mentality and not volunteering information are only precautions to ensuring confidentiality; there are no guarantees. If the firm becomes involved in ligitgation, then information contained in the audit reports and in the underlying documentation (working papers) can be disclosed to other parties via "discovery" provisions. Discovery rules are broad enough to affect any environmental audit which is relevant to the pending action. (Truitt, et al, 1983:29).

(ii) Means of Disclosure

Sensitive information can be disclosed in a number of ways -- voluntarily, inadvertently, by regulatory authority or prescription (or the particular agency's inadvertent disclosure), or through deliberate breach of confidence. Some of these are beyond the control of the company, giving rise to the first 'rule' of the confidentiality issue: there is no way to guarantee that the confidentiality of audit information, including the underlying documentation, can be maintained. (Truitt, et al. 1981:27; McIntyre, 1983:12). There are, however, certain precautions that can be taken to enhance the confidentiality of sensitive business information generated by an environmental audit.

(iii) Means of Safeguarding

Perhaps the most obvious precaution is to treat all information as confidential. Confidentiality of information can't just be claimed by its owner; it must be demonstrated and, if necessary, proven. An underlying principle of both U.S. and Canadian federal Freedom of Informatin Acts is that if the information is not treated as confidential, it is not entitled to legal protection and can be disclosed to third parties upon request. (The Freedom of Information Act, 1983. Canada; Henz, DJ., 1983:6). In this respect, Henz identifies two further "golden rules" to follow: Never volunteer information and maintain a 'confidentiality mentality'. (1983:6).

who need to know) and the control of documents.

4) Lastly, there must be an **absence of waiver.** The privilege can be waived if the holder of the privilege voluntarily produces documents or testifies on documents or communications for which the privilege is claimed or if the holder fails to object to the production of the materials by another. In the past the privilege has been waived both inadvertently and knowingly. (Truitt, et al, 1981:31- 46; Henz, 1983:6-7).

If all of the above conditions are met, an environmental audit can be protected from discovery. The price is that the audit must be structured as a legal-advice-giving-exercise, not as a routine management tool and information system. Corporate management must direct the lawyer to conduct an audit for the purpose of giving legal advice. (Reed, 1983:10306)

(B) Work-Product Doctrine

The work-product doctrine is the second exception to the rules of discovery, providing a complementary means to maintaining the confidentiality of an environmental audit. Specifically this doctrine prevents the disclosure of materials* prepared by or for legal counsel in anticipation of litigation. Though more narrowly focussed than the attorney-client privilege, this doctrine accords greater protection to the mental impressions and opinions of legal counsel.

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*includes documents, notes and other tangible things, (Reed, 1983:10307).

For the doctrine to apply however, materials must be prepared in anticipation of litigation. (Truitt, et al, 1981:48) Exactly how imminent litigation must be is a hazy and unsettled question. While litigation need not be formally commenced, merely a remote possibility of litigation is insufficient. (Henz, 1983:7). The anticipation of litigation should be reflected by counsel's actions and advice and the client's response, by the facts and design of the audit itself, and by the overall maintenance of a confidentiality mentality.

Immunity provided by the work product doctrine can be overcome if the requesting party can show 'substantial need' for the requested materials and 'undue hardship' in obtaining equivalent information from other sources. (Truitt, et al, 1981:48, Henz, 1983:7). Information contained in environmental audits is quite vulnerable to 'substantial need' and 'undo hardship' provisions, for such information may not be available anywhere else. On the other hand, some of the information contained in the audits may be protected if they constitute the 'mental impresssions, conclusions, opinions or legal theories of an attorney'. Such subjective thoughts are not subject to discover rules.

The way in which audit information is handled (regarding confidentiality) may vary from firm to firm; it depends largely on the goals and objectives of the audit program and the overall management philosophy and corporate culture of the firm. Some firms believe that audit information should remain confidential and thus take the necessary precautions and measures to ensure it.

The overwhelming majority of firms, however, treat confidentiality as a 'non-issue' and do not take the necessary legal precautions for the attorney-client privilege or the work-product immunity doctrine. In a survey conducted by A. D. Little's Center for Environmental Assurance of over 20 companies, involving close to 600 audits conducted over a three year period, not one company chose to take the necessary legal safeguards to ensure confidentiality of the audit results (A. D. Little, 1983B). There are several possible reasons why this is so.

First, attempting to ensure the confidentiality of environmental audit reports through the attorney-client privilege and/or the work-product doctrine can be very costly and burdensome process. Legal counsel must have an active role in virtually every phase of the audit, meticulous regard for the requisites of legal precaution must be taken and even then, there is no guarantee that audit results will not be subject to discovery. In the final analysis it could be all for nothing.

Second, attempting to safeguard audit information may in fact interfere with the purpose and conduct of the audit. The audit is a management information tool and restrictions on the finding, reporting and communicating of that information may serve to decrease its effectiveness and ultimate utility. Ralph Rhodes of Allied Corporation notes,

> ..the prime purpose of the program is to communicate the situation to the people who have to know. Straining the information through a lawyer under the attorney-client privilege is an impediment to the kind of communication you want. So we feel you must tell it like it is. (in Environmental Audit Letter, Vol. 1, No. 6, 1983:4).

Thirdly, it is unlikely that an environmental audit will produce information that warrants such legal protection. As mentioned already, disclosure of non-compliance incidents is required under many environmental regulations; regulatory agencies are given authority to examine records or discharges. As far as other 'sensitive' information is concerned (operations or marketing), Ladd Greeno of A. D. Little's Center for Environmental Assurance states, "I don't know of any company that needs an audit report in the kind of detail that would cause problems over the release of proprietary information." (in Environmental Audit Letter, Vol. 1, No. 6,

3.4.6 POTENTIAL DOWNSIDE RISKS OF ENVIRONMENTAL AUDITING

In this paper, it has been assumed that environmentally responsible firms will use environmental auditing in a positive manner. The **potential** for mis-use of environmental auditing has not been addressed. This section briefly discusses some concerns regarding the extent to which environmental auditing can be manipulated or subverted by environmentally **irresponsible** firms.

There is an increasing recognition among private firms of the public relations benefit to be gained from conducting environmental audits. Indeed, this has become a significant "selling" feature. This raises the danger that environmental auditing will become a corporate exercise in public relations, defeating its original environmental goals. Given industry's past track record with respect to environmental performance, the public may view voluntary industry initiatives with suspicion and skepticism, particularily in

the absence of safeguards to authenticate auditing efforts. What is to prevent irresponsible firms from claiming to be in compliance with regulations, to be identifying and correcting environmental problems and to be environmentally responsible, if in fact, they are not? Bluntly speaking, what is to prevent firms using environmental auditing to make themselves look like better environmental actors than they really are?

What if, as a result of conducting an audit, a company discovers that it is doing more than is necessary to meet its environmental obligations? Could it not reduce its efforts aimed at environmental protection in an attempt to reduce costs?

And what of the auditor's accountability and 'code of ethics'? If a potentially serious and damaging environmental problem is discovered, does he or she have an obligation to inform the public? However unlikely it might be, the company is in a good position to hide the information.

While some of these concerns could be dealt with in a formal government environmental auditing program, what if no such program is forthcoming? Peraps a professional association of environmental auditors would address this need by establishing a code of ethics, standards of conduct, auditor accountability, etc.

Minimizing the potential for misuse of environmental auditing may require the formalization of a "watchdog" function: either of public or a professional origin.

4.0 ENVIRONMENTAL AUDITING AS A REGULATORY CONCEPT

As a supplement to traditional inspection and enforcement activities, environmental auditing holds promise as an innovative tool to assist such agencies in fulfilling their public mandates under the strain of fewer resources accompanied by more diverse and complex responsibilities. Recognizing this, regulatory authorities in the United States, particularly the federal Environmental Protection Agency, have been exploring potential responses to private sector auditing which seek to harness and maximize the benefits to itself, the public, the environment and the implementing firms. This chapter discusses the major responses proposed by the U.S. E.P.A., including their motivations, benefits and implications. The experiences and proposals of the E.P.A. should be of interest to Canadian regulatory authorities who, while operating under different legislative, political and administrative frameworks, share similar mandates and concerns.

4.1 E.P.A.'S INITIAL INTEREST

Blumenfeld and Haddad (1983:3-7) identify four major reasons why the U.S. E.P.A. believes it is important to encourage the spread of environmental auditing. First, E.P.A. believes that environmental auditing can institutionalize corporate responsibility by strengthening the internal procedures and incentives that promote compliance as part of normal business activity. The existence of an auditing program signals to the firm's staff that senior management is committed to complying with environmental regulations. Also, an audit program strengthens the cadre of professionals within the

organization whose rewards are based on environmental performance rather than on production or financial outcomes alone.

Second, E.P.A. believes that auditing can help to achieve and monitor day-to-day compliance with environmental regulations in ways which exceed conventional periodic inspections. This is especially so as enforcement emphasis shifts from one of initial installation of pollution control devices to one of long-term, on-going compliance. By building on internal systems, firms are better able to monitor for proper operation and maintenance of pollution control devices, work practices and management procedures.

Third, if recognized as a legitimate means of assuring compliance, environmental auditing can lead to an improvement in enforcement targetting. Audit programs could be used to differentiate more reliably and precisely between "compliers" and "non-compliers". Enforcement actions could be targetted accordingly.

Fourth, E.P.A. believes that a strategy that acknowledges responsible firms' environmental performance has long-term potential for improving government/industry relations and reducing unnecessary public/private confrontation.

The potential benefits of environmental auditing to the public, the environment and regulatory authorities provide ample motivation for such authorities to take an active role. The precise role which maximizes benefits to all constituencies is less definite.

4.2 FIRST APPROACH - MANDATORY ENVIRONMENTAL AUDITING

E.P.A. first considered a traditional "command and control" regulatory approach consisting of mandatory environmental audits conducted by licenced third party auditors. This approach developed from a 1976 Council on Environmental Quality proposal to use licenced Water Pollution Auditors to assist E.P.A. and state authorities in ensuring compliance under the National Pollutant Discharge Elimination System* (NPDES) permit program. (Palmisano, 1982:9). Eventually expanded to ecompass all environmental media, the proposed approach was to be modelled after existing non-governmental licencing functions such as Certified Public Accountants. Accordingly, certified "environmental auditors", licenced by the E.P.A., would certify that a firm did or did not comply with relevent requirements. All sampling and analysis would be conducted at certified laboratories. Auditors would be paid by the E.P.A. with funds provided by regulated and inspected firms.

E.P.A. considered third party auditing to be an efficient and effective means of increasing the quality and reliability of compliance data. Other perceived advantages of the program included:

*Monitoring would be done in a systematic way with greater accuracy than before.

*The cost of monitoring would be borne by the polluters,

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*The NPDES Program requires that permits be held for all discharges from point sources into "waters of the United States." They impose precise and detailed pollution control requirements: numerical limits on discharges, monitoring and reporting requirements as well as compliance schedules for construction of new pollution control equipment. (Truitt, et al, 1981:190).

not the regulators.

*The environmental audit program could adjust to the growing compliance assurance problems in ways traditional enforcement activities fail to do.

*States would have information (not just data) regarding a firm's compliance developed by professionals.

*Data would be generated and reported in a consistent manner across the country.

*Enforcement activities could be better targetted. (Palmisano, 1982:9)

Several factors lead E.P.A. to ultimately reject the mandatory approach. The cost to E.P.A. to creating, licencing and overseeing these private sector auditors would be high -- preliminary estimates put the bill at over half-billion dollars annually. (Reed and Wetstone, 1981:T15). There were also concerns regarding the need to ensure the quality and impartiality of auditors -- to 'audit the auditors'.

Private industry, who considered the proposal to be just another regulatory burden, raised concerns over the potential release of confidential and/or sensitive business information. Moreover, firms that did not have the management committment to develop environmental audit procedures voluntarily seemed unlikely to establish meaningful, effective programs under compulsion. Indeed, such an approach could have stimulated public/private confrontation and strained industry/government relations, running counter to the original goals of the E.P.A.

Finally, there were difficulties concerning the design and implementation of a mandatory scheme, related largely to the inherent limits of traditional command-and-control regulation. First, mandatory schemes by nature are inflexible with regard to

specific firms and industries. Second, the diversity of existing programs and the focus of auditing on management practices as opposed to end-of-the-pipe compliance posed difficulties with respect to the development of uniform standards and regulations. Lastly, there was a need to back any regulations with credible and rigorous enforcement.

4.3 SECOND APPROACH - VOLUNTARY ENVIRONMENTAL AUDITING

At the core of E.P.A.'s second initiative, voluntary "incentives based" auditing, was the notion that regulators could trade off certain non-critical oversight functions as an inducement to industry to implement or upgrade environmental auditing programs. Observing that environmental auditing was moving firms into better compliance with regulations, E.P.A. felt that by simply promoting voluntary auditing it could foster better compliance over time. While no company would be required to establish a program, those who chose to participate, and who met specified requirements, could qualify for certain incentives from E.P.A. and pilot states.

Some of the incentives considered included: less frequent government inspections, reduced reporting or recordkeeping requirements, accelerated ("fast track") permit review and renewal, waiver or suspension of penalties for reportable violations, and differential U.S. Securities and Exchange Commission disclosure requirements. (Blumenfeld and Haddad, 1983:10). The thrust of the program was to recognize and reinforce positive behaviour of responsible corporations. Perhaps formalized with a certificate, such recognition could be valuable in demonstrating to senior

management, the board of directors, stockholders and the general public, the good-faith effort the company was making to comply with environmental requirements.

4.3.1 IMPLEMENTATION

It was intended that the voluntary program would include only those firms that had demonstrated good corporate responsibility and had established environmental auditing programs. Together with industry and environmental groups, E.P.A. and participating pilot states would draw up eligibility criteria to evaluate industry applicants as well as guidelines for an acceptable environmental audit program. While the intent was not to impose specific and rigid design criteria on corporate programs -- since such restrictions could serve to deter participation -- it was necessary to establish some generic, minimum requirements.

Based primarily on a review of existing effective audit programs, some of the preliminary standards considered included: explicit top management support; an audit team or manager independent of production responsibilities; plant level procedures to assure prevention of environmental problems and compliance with regulations (compliance assurance); a structured audit program with written procedures; a formal system for reporting audit findings; and a corrective action program. (Blumenfeld and Haddad, 1983:11). The acceptability of these elements would be determined by flexible evaluation criteria developed jointly by E.P.A., pilot states and industry.

If a firm met eligibility and performance standards, it would be asked to commit to promptly report and correct all reportable instances of non-compliance. (A 'reportable' non-compliance would be previously defined by industry and regulatory agencies). In addition, the company would have to commit to an annual certification by the Chief Executive Officer or audit manager that **a)** audit procedures are performing to the company's satisfaction, in accordance with the specifications on the original application and, **b)** that all reportable instances of non-compliance were reported and that they are being corrected according to an approved timetable.

In exchange, E.P.A. and state agencies would agree to reduce or waive penalties -- to the extent allowed by law -- for violations that are promptly reported and corrected. E.P.A. and state agencies would also provide other tangible rewards, such as those described earlier. At the same time, they would come down hard on those companies which failed to report or correct reportable violations subsequently revealed by other means. Moreover, they would reserve the right to inspect the company's facilities and take any necessary action, such as disqualification from the program, if the results of the inspection so warranted.

4.3.2 BENEFITS

(i) Government

The incentives-based approach would have provided government agencies with the following benefits. First, it would allow for a more balanced enforcement policy, enabling regulatory authorities to apply positive sanctions to firms with good compliance performance and negative sanctions to firms with poor compliance performance. Second, it would allow for a more efficient allocation of public resources: reduced inspections, monitoring and general oversight at firms with auditing programs would free up resources which could be used to inspect non-complying or problematic firms more frequently and more thoroughly. Third, it would facilitate a shift from traditional adversarial modes of regulation ("command and control") to a "second generation" mode of regulation, allowing industry more freedom to manage compliance as they manage production or quality control (Palmisano, 1982:11). Fourth, regulatory agencies would have greater certainty that firms are in compliance with environmental regulations. Fifth, and perhaps most important, a joint industry government incentives program would provide better overall environmental compliance and hence, performance. It would assure that companies pay adequate attention and respond expeditiously to non-compliance problems above and beyond what traditional 'snap-shot' inspections can do.

(ii) Industry

Participating industries would also have benefited from the program. First, the incentives approach would have removed one of the major disincentives of industry implementing auditing programs: the fear of discovering, documenting and being penalized for compliance problems that were previously unidentified by regulatory authorities. Second, and related to the first, financial benefits would occur through the avoidance of costly enforcement penalties associated with non-compliance and potential litigation, as well as through the improved ability to plan compliance priorities and expenditures. Third, it would help to strengthen rapport and relations between industry and government agencies, leading to more effective and open communication and away from confrontation. Fourth, E.P.A.'s sanction and approval of firm's auditing programs could lead to public relations benefits, enhancing credibility among stockholders, government agencies, legislatures and perhaps most important, in the marketplace. Fifth, the program would give industry greater certainty and predictability of government enforcement actions and future intentions.

4.3.3 INDUSTRY'S REACTION

Industry reaction to the proposed incentives approach was mixed: ssome firms supported it, others did not. Some questioned the motives behind the program, feeling that a voluntary program would inevitably lead to a mandatory, rigid and intrusive program. Moreover, it was feared that criteria for evaluating a firm's

auditing program would become inflexible requirements, forcing companies to restructure their existing programs and alter management styles. There was also concern whether the criteria for evaluating the acceptability of a firm's audit program could be made general enough to admit firms with highly effective though structurally diverse audit programs, yet specific enough to exclude companies whose programs were unlikely to be effective. Others still were concerned that individual states might establish diverse programs causing firms with facilities in more than one state to develop different programs. (Palmisano, 1983A:30; Blumenfeld and Haddad, 1983:14).

Relative to the costs of having to correct all identified problems (which might not otherwise be detected or reported) and to the potential for mandatory programs, some firms felt that the incentives for voluntary participation were insufficient. There were also concerns that neither the public nor the government would find credible an enforcement program which waived inspections at certain facilities. Moreover, since inspections were already infrequent at most facilities, a reduction in frequency would have little meaning. Furthermore, others were unclear whether, and to what extent, E.P.A. had the legal authority to reduce or waive penalties or offer other incentives. (Palmisano, 1983A:30; Blumenfeld and Haddad, 1983:14).

There were also concerns regarding the potential for the release of confidential compliance data and other sensitive business information. E.P.A.'s proposed program never intended to require the submission of companies' audit reports. Nevertheless, firms

with audit programs were concerned that if the government or environmental groups chose to publicize and act on the audit findings, companies who had brought their own problems to light would be compromised while their competitors who had not performed audits would escape adverse publicity. (Blumenfeld and Haddad, 1983:15).

While several states expressed an interest in E.P.A.'s proposal, others did not have the resources to commit to a program outside the traditional regulatory framework. Environmental groups, although they did not object to E.P.A. encouraging environmental auditing, did not want to endorse a program which could lead to a reduction in enforcement strength. These concerns, coupled with those expressed by industry,, prompted E.P.A. to abandon the voluntary incentives-based proposal.

4.4 E.P.A.'S CURRENT APPROACH

E.P.A. still believes that the original reasons for exploring and supporting environmental auditing remain valid. However, instead of using structured approaches such as third party auditing or voluntary self-certification, it will focus on less structured, informal initiatives.

> It seems to us that environmental auditing has to sort itself out within industry before it makes sense for E.P.A. to think about any kind of formal program. This is an area where industry has the lead and we are the followers. Private-sector auditing is still too new, too fluid and too diverse for different firms within the same industry -- let alone across industries -- to attempt to cram it into a single federal box. (Cannon, 1982:8).

E.P.A.'s current position consists of three interrelated initiatives: endorsement, analysis, and assistance. E.P.A. believes that these activities can adequately promote the desired benefits in the short run, without the down-side risks.

*Endorsement. E.P.A. will publically, repeatedly and meaningfully support private-sector auditing efforts. Specifically, to encourage the widespread adoption of environmental auditing throughout private companies, E.P.A. will:

-act as an clearing house on auditing practices to help companies learn from each other without fear of antitrust constraints.

-conduct or sponsor periodic workshops to aid the transfer of this information

-showcase or highlight successful and effective indiviuual environmetnal audit programs

-develop and work with networks of interested constituencies, including business, environmental groups, regulatory agencies, professional and trade associations, academics and others.

*Analysis. E.P.A. is developing an analytic base on which to build future activities. Feedback from earlier proposals revealed that E.P.A. needs to know more about existing corporate auditing and compliance assurance programs, about which aspects of these programs actually make a compliance difference, about the benefits of environmental auditing, about alternative government strategies for stimulating private initiatives, and more.

*Assistance. E.P.A. will continue to provide substantial assistance to interested states and firms and will fully support joint public/private auditing approaches. (Palmisano, 1983A:30).

SUMMARY

The potential benefits of environmental auditing to private corporations, the natural environment, the general public and to regulatory authorities suggest that it could make an important contribution to environmental protection efforts in the 1980's.

However, it must be placed in its proper context: it is not the be-all and end-all of environmental compliance. Environmental auditing is only one of several tools available for assuring compliance. Moreover, environmental auditing and compliance assurance should be only single elements of a firm's total efforts directed at environmental management and protection; many others are necessary.

More importantly, an environmental audit is not the substance. It is a tool. It evaluates existing systems and activities. It does not itself assure sound environmental management anymore than financial auditing assures sound financial management. Sound environmental management results from effective systems and procedures employed at the plant level. However, through diagnosis and evaluation, environmental auditing can identify areas for improvement in those systems and procedures.

Environmental auditing is still in its infancy and many barriers must be overcome before its full potential is realized. The first and most obvious is the simple diffusion of the concept among potential users: awareness of it is a prerequisite to its adoption as a management tool. The increasing number of published articles, conferences, workshops, and public endorsements suggests

that this process is well underway.

Awareness alone, however, may not motivate a company into establishing an environmental auditing program. There is a need for more research into the benefits of environmental auditing to implementing firms, with emphasis on the quantification of benefits.

There is also a need for basic research into the theory of environmental auditing. This should include the identification and development of "generally accepted environmental auditing principles". While not necessarily adopting the precision and rigidness of equivalent accounting principles, they should strive for a high and uniform quality of environmental auditing programs across and within industries. The 'rules of the game' must be established and more important, they must be understood and agreed upon by all parties.

Many other issues relating to environmental auditing need to be addressed and further researched. What are the minimum elements of an effective audit program? What is the role, responsibility and interrelationship of internal auditors with respect to the audit program and other, active personnel? What is the relationship of environmental auditing with other corporate programs such as safety and health, quality control and strategic planning? What measures should be used to evaluate the success of auditing programs? What role should regulatory authorities take in response to industry initiatives?

The identification and development of auditing methods and techniques is also needed. These will likely evolve from the trials and errors of individual companies. However, there should be a mechanism (public? professional? academic?) whereby such programs are reviewed, effective techniques and procedures documented, and an overall "package" made available.

It is important that research into the benefits, principles, methods and techniques of environmental auditing addresses the needs of medium, and especially, small sized companies. While large and small size companies have many similarities, there are also important differences.

To establish legitmacy within industry and in the public's eye, eventually, a professional association for environmental auditors may need to be established. Such an organization in addition to addressing those needs identified above, would be responsible for establishing standards of conduct, a code of ethics, channels for the dissemination of knowledge and information, and so on. In time, the licencing and accredation of professional environmental auditors seems likely.

The future for environmental auditing, while by no means guaranteed, appears promising. Interest and activity in the area is steadily increasing in many sectors, and more and more firms are establishing programs. The wheels are in motion; just how full the gasoline tank is however, is unknown.

The responses and initiatives of various industries over the next several years will determine the future of environmental auditing. For them, it is both an opportunity and a challenge. It is an opportunity to shape their own environmental future by engaging in an activity which is socially, environmentally and economically responsible. The challennge is to develop and promote tne concept further, and to participate and assist in the design of public policy responses.

If the opportunity and challenge are squandered, we may all lose, But industry itself could be the biggest loser of all.

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APPENDIX 1

EXAMPLE OF AN AUDIT REPORT

TO: The President
XYZ Corporation

cc: James Allen, Manager
Anytown Manufacturing Plant

SUBJECT: Environmental Audit of XYZ Corporation's Manufacturing Plant, Anytown, Massachusetts

DATE: May 6, 1983

I. BACKGROUND

This report summarizes the results of an environmental audit of XYZ's manufacturing plant at Anytown, Massachusetts. Its objective is to communicate to XYZ's management: (1) the compliance status of the Anytown plant with respect to federal and state environmental laws and regulations; (2) the compliance status with respect to the company's environmental control policy and procedures; and (3) observations regarding the environmental management systems. All deficiencies noted during the audit were discussed fully with facility management.

The objective of the audit was to determine the facility's compliance with federal and state environmental regulations and corporate environmental policies. The audit included those air pollution control, water pollution control, and solid and hazardous waste management activities related to the Anytown manufacturing plant. Particular emphasis was placed on compliance with the Clean Water Act (CWA), the Clean Air Act (CAA), the Resource Conservation and Recovery Act (RCRA), and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The period under review was January 1, 1982 through March 25, 1983.

The audit was conducted from March 22 through 25, 1983. The audit team was composed of John Smith (Senior Environmental Auditor), Jane Jones (Auditor), and William Day (Auditor and Chemical Engineer), under the direction of John Smith. Participating staff of the Anytown plant included James Allen (Plant Manager) and David Ross (Plant Environmental Manager).

The audit was based on:

- A physical survey of the facility;
- An examination of environmental, administrative, and operating records made available to us by XYZ staff;
- Discussions with Anytown plant management and staff; and
- Verification procedures designed to examine the Anytown plant's application of and adherence to environmental statutes, policies, and standards.

It must be noted that, at present, there are relatively few standards about what is "adequate" environmental management and virtually no generally accepted principles, procedures, or standards for conducting an environmental audit. Therefore, considerable judgment on the part of the audit team was involved in conducting the Anytown environmental audit.

II. AUDIT FINDINGS: ENVIRONMENTAL STATUTES

On the basis of our review, we believe that during the period January 1, 1982 through March 25, 1983, those environmental programs at the Anytown plant were such that the plant was in substantive compliance with existing federal and state air pollution control, water pollution control, and solid and hazardous waste management regulations or compliance schedules, as currently understood, except as noted below.

A. Exceptions--Water Pollution Control

1. In reviewing a random sample of pH monitor records for 15 days, we identified three excursions of effluent pH that exceeded permit limits. We were not able to confirm that these incidents had been properly reported.

2. The SPCC plan states that the entire plant is fully fenced. In fact, the audit team observed that the No. 2 pond is not fenced.

B. Exceptions--Air Pollution Control

1. Several air emissions sources that were registered with the Department of Environmental Quality Engineering as controlled were not connected to control equipment.

2. The Anytown plant is located in the Priority 1 area of Massachusetts Air Region I and is, therefore, required by Massachusetts Department of Environmental Quality Engineering regulations to have a written air pollution emergency plan of action available for inspection upon request. The written plan is to specify abatement strategies and courses of action for declared air emergency alerts, warnings, and emergencies. The plant was unable to produce a copy of such an air pollution emergency plan.

C. Exceptions--Solid and Hazardous Waste Management

1. In touring the plant, the audit team noted that transformers 1 and 2 outside of Unit A are not marked with an indication of PCB content.

2. A written analysis plan is required (40 CFR 265.13(b) (1-4)) for all hazardous wastes treated on-site or stored on-site by the Anytown plant. The plant's current plan does not, in our opinion, meet the following requirements of 40 CFR 265.13:

   - Rationale for selection of parameters to be analyzed;

   - Frequency of review and repeat analysis.

III. AUDIT FINDINGS: CORPORATE POLICIES AND PROCEDURES

On the basis of our review, we believe that during the period January 1, 1982 through March 25, 1983, environmental management activities at the Anytown plant were in conformance with Environmental Control Policy of XYZ Corporation, except as follows.

A. Exceptions--Corporate Environmental Control Policy

1. There is a corporate procedure for the recycling of used oils. This procedure is not fully adhered to. The audit team observed four drums of waste oil mixed with refuse in the facility's disposal area.

IV. AUDIT OBSERVATIONS: ENVIRONMENTAL MANAGEMENT AND CONTROL SYSTEMS

The observations on the overall managerial approach and the Anytown plant environmental management and control systems cited below refer to matters that are not specifically required for compliance with one or more of the environmental statutes. However, they relate to areas of potential concern that, in the audit team's judgment, need attention or improvement.

A. Observations and Recommendations--Solid and Hazardous Waste

1. Testing for determination of wastes hazardous under RCRA appears to have been performed to meet the needs of the disposal firm, rather than to confirm or refute the basis for hazard determinations. We recommend that future testing be planned and undertaken with a clear statement of the facility's as well as the disposer's information needs.

B. Observations and Recommendations--Environmental Management Systems

1. Many of the managerial procedures and systems for environmental concerns pertaining to the Anytown plant are informal. Management systems tend to be based largely on the energies and attention to detail of a few key people rather than on written operating or environmental procedures. While this is often the case in plant-level environmental organizations and in no way is intended as a reflection on the capabilities of the Anytown personnel involved in the management and supervision of matters pertaining to the plant's environmental performance, the audit team recommends that steps be initiated to formalize some of the components of the informal management and control system. Where standard practices are important to achieving compliance, the audit team believes they should be incorporated into operating manuals or developed into written standard operating procedures.

John Smith
Environmental Auditor

SOURCE: A. D. LITTLE, 1983D.

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